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The Vertical, the Horizontal, and the Arched.

SOME few weeks back, in writing on the subject of Architectural Style (p. 273, *ante*), we referred to the two opposite, or rather complemental, ideas of the vertical and the horizontal, as dominant in certain schools or classes of structural design. It must, however, be borne in mind that there is a close and essential connexion between the two ideas. They represent co-ordinate elements in space. To a certain extent they are functions of one another. It is not possible to have a purely vertical or a purely horizontal building. Under any conditions a certain height is required for a wall, —a certain breadth is required for a roof. Nor is the compromise which has to be effected between the two dimensions which are at right angles to each other always expressed in their own terms. Indeed, horizontalism in structure is more conventional or artificial than perpendicularity. To set a tent-pole upright is a natural effort, because its stability is the greatest when it is upright. But from the goat-skin sheet which forms the shelter of the Bedouin, to the pediment of the Greek temple or to the lofty pitch of Gothic roof, inclined lines are far more naturally resorted to by the builder than true horizontal lines. Long level lines of shade mark the eaves of a building or define the ridge of its roof. In domestic buildings, in Italy as in Greece, a level roof is indeed attained; but it is attained for the purpose of forming an additional story or terrace on the top, and it is attained at a very considerable effort of constructive skill.

In the most ancient architecture of which we have any unbroken monumental record,—that of Egypt,—the oblique line dominates. It cannot here be said that the incline is a compromise between the vertical and the horizontal; for, on the contrary, all that which in Egyptian style is to some extent either vertical or horizontal seems to have been developed out of that which is inclined. The primary form of the pyramid controls almost the whole series of motives in the architecture of Egypt. It is reduced to a mere symbol in the obelisk, but still it is there. So it is in the pylone; so in the interior columniation of the temples. The true vertical line may almost be called an abomination to the Egyptians. Whether the form naturally assumed by the tent has been taken as the norm of their architectural construction, whether it arose from the excavated architecture of the rocks, whether the stability that is attained by the form of the pile in which four spheres can be readily arranged struck the mind of the early architect, or how he arrived at that most unarchitectural of all architectural outlines, is uncertain. But the fact remains, a fact heavy with all the weight of the Great Pyramid.

Far different has been the fortune of the other compromise between the vertical and the horizontal, namely, the arch. In the arch we may be said to have the first original structural idea conceived by the human race. To support a beam on poles, to rear a tent, to slope the roof of a shanty, even to build a pyramid, is a matter that requires little that deserves the name of original conception. Birds have structural powers equal or superior to rude work of that nature. Even the monkey is said, in certain species, to have attained it. The beaver certainly has aimed at the practice of horizontalism; and foxes, rabbits, and moles have learned how to form tunnels for their abode, in anticipation of the lessons of human troglodytes. The mere leaning of a stick against a tree suggests the commencement of the hut. It is otherwise with regard to the arch. That structure may, doubtless, have originated in what we call accident. There are few mountain districts, at all events in limestone formations, of any extent, in which natural arches are not to be found; spans which are usually, by common consent, attributed to an infernal architect; the growth of the quasi-domical roof of the early "treasuries," formed by overlapping horizontally-laid stones, ultimately meeting at the apex, is understandable; but to pile together the series of blocks, whether of wood, of brick, or of stone, that formed the earliest voussoirs,—to support the lateral thrust by adequate abutments; to weight the haunches in due proportion to the curve; to seal the trembling balance by the wedging home of the keystone,—all this, however slowly man may have arrived at the aërial grace of the Gothic builders, springs from a power of origination which can find neither pattern nor followers in the infrahuman world of life. Man may take the invention of the arch as a surer measure of his high intellectual status, as compared with all other terrestrial creatures, than even the use of fire. For fire may originate, and has originated, as legends bear witness, in natural causes. The great sanctity that attended, in such very distinct races of men, the guardianship of the sacred fire, seems to point back to a time when the means of kindling flame were unknown or of great difficulty, and when, if the light of the sacred hearth were quenched, there was a prospect of a gloomy and unrelieved winter. It is, no doubt, an enormous step that was taken by man in the mere maintenance of fire,—a step to which none of those creatures to whom the warmth is as grateful as to ourselves have attained, although a raven has been executed for arson. But the guardianship of the hearth is but a small matter when compared to the invention of the arch.

It is, therefore, not without due reason, deeply founded in human nature, and therefore in human history, that the most venerable of unwritten traditions ascribes a mystic sanctity to the symbol, or to the title of the ARCH. We are not about now to attempt a lecture on the drawing-board! We are not about to refer to the cedar-hewers and builders of Hiram, to the "lost word," to the Temple, or to the Ark. Indeed, we may observe in passing, that no reconstructor (on paper) of the Temple, whether that of Herod, of Zerubabel, or of Solomon, has had the courage to vault it with an arch; or as referred to the arched portico found on certain Jewish coins. We wish to bring into clear relief the originality, grace, and beauty, of the grand conception of the arch. It may not, in one respect, be quite so good an example of a pure human invention as the wheel. But the wheel, though it has no prototype in nature in the form in which we are acquainted with it, may be gradually traced to the roller, and thus to the mere log. The arch, though it may have been suggested by such natural arches as exist,—to cite one among many, in the neighbourhood of the islands of the Sirens, on the lovely promontory of Sorrento, or as it expands in its shadowy vastness in the great cavern of the Peak,—demanded such a degree of study and of practical geometric knowledge, before it could be reproduced on a scale of any magnitude, that it may well be regarded as the first great triumph of the human builder.

The word arch, to an English reader, suggests in these days that simple and striking form of the structure which belongs rather to the province of the engineer than to that of the architect. It is with the latter that we have now principally to deal; but it is pardonable to throw a glance at the former. One of the earliest instances of a great arch in this country,—of origin so near our own times that its construction has not hitherto been attributed to the ingenuity of the great enemy of mankind,—is that which was thrown over the river Taafe, near New Bridge, in the county of Carmarthen, in the year 1750, by William Edwards, a country mason. To many of our readers this bold and beautiful work may be familiar, under the name of the Pont-y-tu-Prydd. It carries the road from Llantrissent to Cardiff and Merthyr. This arch measures 140 ft. between the abutments, and has a rise, or versed line, of 35 ft. The curve is the segment of a circle, of 175 ft. in diameter. The soffit rises from the water level of the stream, which is ordinarily but a few feet below that of its banks. The top of the parapet is defined by the segment of a circle of much larger radius than the soffit; and where the spandrel formed between the two curves allows, the haunches are lightened by three elliptical apertures, which pierce the masonry from side to side, and which, on the building of the bridge, were filled with charcoal. The roadway is only 11 ft. wide over the centre of the arch. It is said that Edwards consulted Smeaton on the design, which was made in order to replace an elegant bridge of

three arches which had been swept away by the floods of the Taafe. But by whatever counsel the country mason may have profited, the Pont-y-tu-Prydd Bridge long remained a unique specimen of the arch-building skill of the Welsh masons. The Grosvenor Bridge, over the river Dee, at Chester, with a span of 200 ft., and a rise of 42 ft., being a semicircular segment of 140 ft. radius, which was opened in 1834, was probably the first successor of Edwards's arch which much extended it in dimensions. When these light and graceful structures are compared with the ponderous and yet unstable erections once common in England, and of which old Bow Bridge, as well as old London Bridge, may be cited as examples,—bridges on which the piers occupied as much space as the arches,—it will at once be seen how high a flight was taken by the untutored native genius of such a man as Edwards.

No single arch in this country, however, or so far as we are aware, in Europe, equals in majestic simplicity and chaste elegance the bridge erected by the Chevalier Mosca over the Dora Riparia, near Turin, of which the versed sine is only 18 ft. to a span of 147 ft., thus forming one of the flattest segmental arches of any magnitude which was ever attempted before the great stimulus given to arch-building by the introduction of the railway system into England.

It is not, however, to such a structure as that of the Dora Bridge, perfect example of its kind as it must be admitted to be, that we wish to call attention as the normal type of the arch. We now have to regard the work of the architect rather than that of the engineer, as affording examples of the development of the mode of structure in question. For the dwelling-house, when it assumes the magnitude of a stately residence; for public buildings, churches, courts of justice, palaces; for great commercial centres, such as custom-houses, docks, warehouses, the arch takes a form to study the true development of which we must again turn to the cradle of the builder's craft,—to Italy. The voyager who enters the harbour of Civita Vecchia or of Genoa,—the tourist who drives along the lovely marine terraced road that leads from Naples to Baiæ, or who visits the romantic little archiepiscopal city of Sorrento, can hardly fail to be struck with the magnitude and grandeur attained by that imposing form of structure, the semicircular vault.

The Roman builders were engineers rather than architects; workmen, rather than artists. As workmen they were unrivalled. Their brick-work, their rubble, their cement, remains, where it has had a chance, as solid to-day as it was the year or the century after it was completed. It once fell to the lot of the writer to explore a part of the course of a subterranean aqueduct which had been constructed along the ridge of the St. Angelo hills (which form the Southern side of the Bay of Naples), to supply Pompeii, or perhaps Stabiæ, with water. The existence of this small tunnel had been forgotten. It is not (so far as we remember) mentioned in any classical author. But except in such parts as bear the marks of violence, it is fit to have the water turned into it to-day. Much the same may be said of the aqueduct for the supply of Jerusalem that was built by Pilate, and measured and described by the author of "Tent Work in Palestine."

This excellence of workmanship, however, is accompanied by a want of artistic delicacy. The Roman attempts to copy, or to improve, the Corinthian order of the Greeks, are at once distinguishable by the absence of that pure and exquisite taste of which it is as impossible to disguise the absence as it is to impart it to those who have it not. And this exquisite delicacy of taste is connected with a metrical exactitude of detail of which few persons have any correct appreciation. The delicate gradations of moulding or of entasis were not, we apprehend, worked by the Greek builders by eye. We have no doubt that they used the most exact geometric rules, which were kept as an oral tradition of their craft, and which are thus only to be rediscovered by the most precise application of the callipers and the scale to the relics of the Grecian architecture. And we speak with the more certitude in this respect for this reason. Sculpture will be generally regarded as more of a "free-hand" art than architecture. If, then, we find such minute geometrical accuracy of proportion in undoubted Greek sculptures, as to prove that they were wrought to exact measures of height and of girth, we have an *à priori* evidence that the details of architectural structure were at least as carefully measured. Personal measurement of the majority of the finest relics of Grecian sculpture, some *in situ*, some in casts, enables us to speak with positive certitude as to the exactitude of the measures adopted by the Greek artists of the grand age for the human figure. The "Canon of Polycletus" has often been referred to as to vertical proportions. It has not ordinarily been regarded as dividing the erect figure more minutely than into four equal parts. But it has a fulness and perfection of accuracy (as may be recovered from the marble) so great as to enable the properly-instructed student to ascertain from a single dimension the original height of a statue. In the same way the absolute measurement of the girths by the modulus of the foot comes down to the taper of the fingers. Apply a measuring-line to a Greek statue, and this mathematical relation becomes apparent. Apply it to a Roman copy, and it has entirely disappeared.

It is thus the more worthy of remark that it is to the Romans that we owe, not indeed the invention of the arch, but its adoption as the main crowning feature of their noblest buildings. It is associated with triumph. Those persons who, looking at our London park gates, and especially at that one which is crushed into ridicule by the ponderous superimposed weight of a huge equestrian statue,—unhappy attempt to associate a sense of the ridiculous with one of the grandest names in our history,—we may almost say, in history,—may sneer at the idea of a "triumphal arch." Let them go as far as the Barrière de l'Étoile, however, and they will admit that, however little they may admire, or even understand, the conception, it is capable of producing magnificent effect. And if they go a little further,—go to Rome itself,—or go to that more southern city, celebrated by Horace in his journey to Brindisi,—Canosa, the bilingual,—where the solemn arched portico of Roman brickwork now stands in a cornfield, at the distance of half a mile from the shrunken town, it will press upon the imagination that there was a mighty grandeur in the Roman arch.

Grand as the semicircular arch is, when its size is considerable, as a feature open *au jour*, its effect is incomparably increased when it casts a shadowy gloom. The finest examples of this that at the moment recur to the memory are in certain vast vaults, partly overthrown by earthquakes, which lie off the road from Naples to Baiæ, and which were formerly parts of some of the most costly and luxurious villas, belonging to the great Roman millionaires, ever reared in the world. They impress the imagination by their gloom; they spring like a lesser firmament over the head, a firmament that has power to exclude the bright light and the torrid heat of the higher and more aërial arch of heaven; for here, be it remembered, lies great part of the secret of the effect produced by the Roman architect. He was not working for effect, or at all events for effect alone. He was not rearing up an utterly useless, and therefore unmeaning, erection. He had a definite purpose. In that profound shadow, in those spacious but sunless vaults, he provided a refuge from the heat of summer; a refuge which rendered human life, in the hottest part of the Italian year, a long dream of luxurious enjoyment, to those who had the wealth to command his services, and to avail themselves of his skill. For six weeks or two months of the year, with the shade thermometer by day varying from 86° to 96° Fahrenheit, movement, exertion, or even serious thought, becomes very trying to the brain. Memory itself seems to fail under that great heat. If any business is attempted, the one great desire to be still, or to get into the cool and the dark, renders it a condition all but impossible. But to lie on a couch, in a vast, dark, lofty apartment; to have on no more garments than are shown on the representations in fresco on the walls of Pompeii of Campanian feasts in the time of Augustus or of Tiberius; to listen to the trickle of the little jet of water in the atrium, or even in the apartment itself; to refresh the limbs in the bath; to take off the heated stiffness of the hair by the use of scented unguents; to eat the juicy *nespilus;* and to weave a coronal of the Southern flowers, which include many species of the gorgeous African flora,—this is to enjoy the life of the senses in its highest intensity.

Thus the arch, in its form of the semicircular vault, was the great triumph of the Roman architect, because it was not only a form, but a reality. It was exactly that kind of structure most suited to the climate and the soil, and which, therefore, most readily lent itself to the production of true architectural effect. Just as a triumphal arch erected as an adornment of an English railway is a falsehood in stone or in marble, a vaulted hall in Italy is an appropriate and valued truth. This prime *ratio entis* of the semicircular arch,—its use in the form of the vault,—led to the reproduction of the form, in other cases (where, perhaps, it is not so appropriate), as matter of congruity. For a vaulted room the windows, if there are any, must naturally have semicircular heads. Not, perhaps, necessarily; but the only other admissible form is the flat trabeate top to the light, and, both for structural and for æsthetic reasons, the adoption of the arch is thus almost demanded by the very nature of the building.

How this grand form of roof passed into the dome, and how, owing to the introduction of a new and symbolical arrangement of ground-plan, it gave birth to other forms, which, over a broad zone of the world of architecture, have superseded the more primitive outlines, it may be interesting and instructive to trace. But there is yet a word more to be said as to the vaulted architecture of the Imperial Romans.

Vast size of rooms, in the climate of Italy, is a primary luxury; nor is it a luxury for one season alone, but for all seasons. A room, 50 ft. by 40 ft., and 30 ft. high, if properly arranged as to aspect and illumination, has this value,—we speak from experience. It is habitable all the year round. It is cool and luxurious in summer, care, of course, being taken to exclude the direct sunbeams by rush-mats or wooden jalousies. But it requires no fire in winter, proper care being then given to admit the noon-day beams and to exclude the northern currents. It preserves so nearly a normal temperature all the year round that the owner feels a happy independence of the outer weather.

In the great vaulted apartments in the neighbourhood of Baiæ, however, the wealthy Romans were not content with this medium of moderation. They sought the direct cooling effect of the ground. A partially subterranean dwelling has a chill which is more than would be anticipated from knowing the normal temperature of the earth. A very few feet below the soil is enough to descend in order to attain, we will not say an ice-house temperature, but a refrigeratory, quite as cool as the most luxurious can desire. Therefore, it was not so much as a part of the dwelling-house regarded as a structure built upon and raised above the ground that the vault obtained its importance, as it was as dividing the basement from the upper story of a large building, or as roofing a retreat constructed in the garden or grounds, independent of the house. For such an apartment as we have described, occupying the centre of the *piano nobile*, or first-floor, of an Italian palace, a timbered and ceiled roof often proves cheaper, more secure, and altogether more suitable than a vault. It is as the roof of the subterranean, or semi-subterranean hall,—whether that be constructed for the summer repose of the luxurious, or for the long slumber of the dead, that the vault has its more perfect fitness, and it is as such that it has taken so unrivalled a place in the history of Italian architecture.

City Street Architecture.—No. 112, Fleet-street has been rebuilt with a greatly improved entrance to Poppin's-court. Formerly the carriage-way of this thoroughfare had a height of less than 8 ft. In the erection of their buildings the owners, Messrs. Brentini, voluntarily increased this height to nearly 13 ft. The new buildings, erected from the designs of Mr. S. Knight, 24, Cornhill, are faced with the red-toned materials now often adopted. The plain surfaces are relieved by carvings in stone. Beneath the upper story a long tile panel, bordered with bold majolica enrichments, is inscribed "The Poppinjay," thus restoring the name of an ancient hostel which once stood near the site, and in a carved niche in the centre of the first story the poppinjay (or parrot) is suspended in a ring. It was here that the town-house of the abbots of Cirencester stood, and the fact is recorded by an appropriate tablet. The general contractors are Messrs. Roberts Brothers, of Islington, Mr. Dunn being the clerk of works under the architect.

THE BRAZEN GATES FROM BALLAWAT.

No period in the long story of Assyria's rule may be so fitly styled the "iron age" as that which marks the middle empire, commencing late in the tenth century and ending with the golden age of Sargonide dominion. To the patriarch, "the father of all gods and men," the nation's ancestor, the great god Assur, had been dedicated the early empire, which rose round the primitive metropolis of Assur (Kileh Shergat), and which slowly spread its rule north and west over the fertile river land, reaching its zenith in the reign of Tiglath Pilieser I. (B.C. 1120). The small Semite colony, with its "city on the river bank,"* was but the foundation course, the stone pedestal, of that colossus which in after years stood forth as Assur, the conqueror of all lands. This early empire, with its pastoral kings schooling themselves in the border raids with Akkadian Babylon for mightier deeds in time to come may be fitly styled the "stone age of Assyria." A deep layer of historic *débris* separates this strata from that of the iron age, and splintered fragments of tradition, thickly covered with legend and mythic dross, are all that remain of the link which bound the two. Late in the tenth century a soldier king, with a soldier's name, Tiglath Adur, "servant of the war-god," came to the throne of Assur, and with him dawned the new empire,—the middle age of Assur. As in the patriarch time of early Assyria, the godfather Assur had guided and tended the young child of Babylon, so now the stern Nergal, the "giant god of war,"—the Herakles of Assur, — protected and guided the youthful empire. Calah, the new capital, built in a well-chosen position on the east bank of the Tigris, near the mouth of the greater Zab, became the metropolis of Assur, and there rose the palaces and temples of Assur-nazir-pal (B.C. 885) and his soldier son, Shalmanesar III. (B.C. 860). From the mounds of Calah, now known to the Arabs as Tel Namrúd, that able explorer, Sir A. H. Layard, brought forth the records of the kings who ruled there, and who on palace wall and temple floor have left the record of their mighty deeds. The pavement slabs from the temple of the war-god, on the north-western extremity of the mound, have furnished us with the folio edition of the reign of Assur-nazir-pal, and the walls of his palace portray in sculptured frieze the victories there recorded. The flank of winged bull, or lion, and the side of sculptured obelisk, hand down to us the annals of his warlike son. But of this latter monarch two new records have been found, which far surpass all that had rewarded the search of former explorers.

Dedicated as the middle Assyrian empire was to war's dread lord, it was but natural that such zealous devotees as Shalmanesar III. and his father should have built to him they served a house of sacrifice and prayer, and it is this royal Assyrian house of Janus that Mr. Hormuzd Rassam has discovered during his last visits to the grave mounds of Assyria, and from the ruins of which he has rescued the rich *Portæ Belli* which gave entrance to its courts. Nine miles to the north-east of the rugged tumuli of Nimrud, the traveller will see rising from the plain a small oblong mound, crowned at either end with two dome-shaped eminences which mark the ruins of some crumbled fane. This mound, with strange significance, has been called by the Arabs Ballawat, "The Ruin," and at a short distance from its southern entrance there has grown up a village of some thirty houses, which bears a similar name. This mound, now a Moslem cemetery, was once the site of the temple city of Imgur Bel, the home of the war-god of Assyria, and thither, across the now deserted plain, from the new capital of Calah, year by year, in triumph passed the conquering kings of nations, to render homage to his protector god.

In the bright eastern sun there had flashed the rich weapon and bright armour of the kings of Assur, who had passed to this rich suburban shrine to render thank-offerings to him who had crowned the exploits of the year with victory. But how changed is all; where once was life and wealth and beauty is now nought but waste, decay, and death.

> "The dying sun who sadly leaves the plain,
> With golden hands would conjure up again,
> From these sad mounds, of dull and sombre hue,
> The ruddy flame, which nightly flash'd adieu.
> No temple tower, or brazen portal wide,
> Rich with the record of a monarch's pride,
> Nor terraced lawn, in wide and stately rank,
> Return'd him answer, as to rest he sank.
> Black night, oblivious sable-vested queen,
> Were better mistress of this death-like scene,
> So as light's weary monarch laid him slowly down,
> She, dreaded queen, assumes his empire's crown.
> A buried state, a nation pass'd away,
> Has nought in common with the lord of day."

Nearly thirty years ago the English surveyors, under Captain Felix Jones, who surveyed the regions round the Assyrian mounds, marked the position of Ballawat, lying, as it does, about nine miles north-east of Nimroud, and fifteen south-east of Mosul, and but a short distance from the banks of the Shor Derreh, a stream which flows into the greater Zab. But Layard, who frequently visited the regions round Nimroud, never seems to have devoted any attention to this site, which has now proved so prolific of records of the past. The mound had been for some years used by the villagers of Ballawat as a cemetery, and graves were from time to time dug on its surface, but none until 1875 appear to have reached a sufficient depth to touch the treasures hidden beneath the *débris*. About that time, however, certain fragments of bronze were discovered by a gravedigger in the mound, and as they were seen to bear *kitabé*, or "inscriptions," as well as figures of the infidels, they were preserved, and during some expedition to the town of Mosul were borne thither by the finder. The exploration carried on by Sir A. H. Layard and his followers have taught the turn-penny natives that the Frangi have a value for these *antika*, the result being a far less destruction of monuments than before. Some of these plates of bronze were taken by their finder to Mosul, and were there purchased from him. Two of the largest fragments, about 2 ft. in length and 6 in. in diameter, were purchased by a friend of Mr. Rassam's, and sent to England to him. They were examined by an Assyriologist, and one fragment was found to bear the legend, — Tribute of the Zurái (Tyrians), and Zidunái (Sidonians); while the other fragment represented the Assyrian soldiers cutting down the Cedars of Lebanon. These fragments were exhibited by Mr. Rassam at a meeting of the Society of Biblical Archæology in Conduit-street. Other fragments, smaller than the English portions, were purchased by the French, and are now in private hands. One of these bears the name of the king Shalmanesar. At the time of the arrival of these fragments in England it was not known from what site they came, and so no further search was made. During his expedition to Assyria in 1877-8, for the trustees of the British Museum, Mr. Hormuzd Rassam was able to trace the site whence these records came, and by him Ballawat was first explored. The labours of explorers in Assyria since the time of Sir A. H. Layard had been almost entirely confined to the site of Nineveh, few had devoted any attention to Nimroud. Mr. Rassam commenced operations almost simultaneously on both sites, and from the workmen employed on the latter mound he was enabled to detach a small body to go and tap the site of Ballawat. The mound being the cemetery of the village, it was extremely difficult to excavate, but by his perseverance and native knowledge of the people, Mr. Rassam was able to avoid any direct riot, and to lay bare portions of both the north-west and south-east sides of the mound. The city or temple town of Imgur-Bel, which the inscriptions discovered on the site show to have stood here, was erected on a raised oblong mound, with its corners pointing to the cardinal points. The circumference of the mound was roughly estimated as about 2,000 ft., the decay of the upper portion of the erections on the north and south having caused it to assume a somewhat oval form. On the south-east side of the mound was found the shrine of the god, and a small temple attached to it. The temple was in greater part cleared for Mr. Rassam, and its plan ascertained. It was small in size, but probably was richly decorated for the royal worshippers. It was 45 ft. in length, and 25 ft. in breadth, and the corners seem to have had curious chamfering buttresses. Its axis was nearly due east and west, and at the east end was situated a chancel, where was the altar of sacrifice, standing 8 ft. from the east wall, and approached by four graduated steps. Of all the Assyrian edifices discovered, there is none which at first glance is so Christian in its plan as this temple of Nergal at Ballawat. Near the altar was found a tank, with drain for carrying off the blood of the victims slain, or the wine and other libations poured on the altar. No trace was found of the statue of the god, which had been placed there. On the north side, Mr. Rassam discovered a stone cist, 3 ft. 6 in. by 2 ft., containing inscribed foundation-stones of the temple. This interesting safe is now to be seen in the central saloon of the Assyrian gallery in the British Museum. The opening to admit the tablets was in the centre of the face, and grooved to admit of a stone lid being placed over the opening. On the face of the cist was carved a duplicate text to that found written on the stone-books within.

From this text we learn the name of the royal builder of the shrine, and read his pious dedication of it to the warrior god, gaining a faint glimmer of the history previous to his reign.

The temple seems to have been erected, and indeed the whole block of buildings built, by Assur-nazir-pal (B.C. 885), who commences his inscription with the royal genealogy.

"Assur-nazir-pal, the great and powerful king, king of multitudes, king of Assyria.

Son of Tiglath-Adar, the great and mighty king, king of multitudes, king of Assyria.

The son of Rimmon Nirari, the great and mighty king, the king of multitudes, and the king of this same Assyria."

Such was the thrice royal pedigree of the builder king, who records the erection of a "holy house" to Nergal, the war-god.

This opening passage is followed by a well-drawn *précis* of the royal conquest, and a most concise definition of the geographical limits of Assyria.

From the slopes of the Zagros to the shores of the Mediterranean, "the great sea of setting sun," from the rugged stones of the Syrian and Armenian hills, to the alluvial shores of the Persian Gulf, he was lord and master of all. The new Phœnician and Syrian States had rendered homage and service to him, and the wild rebels,—the Arabs or Bedouins, called in this inscription the Súkhi, "revolters,"—had submitted to him. Much of the southern frontier had been recovered from Babylonian marauders, and restored to his rule, and we may perhaps include in these portions the ancient capital of Assur, which has now quite fallen from the page of history.

The troubles which had closed the early empire had ruined and made desolate many cities of Assyria, and among them seems to have been the one which occupied the site of Balawat; for the royal scribe states,—"This city anew I built, and the city Imgur-Bel I proclaimed its name." Here he states, with rich cedar from Lebanon and other precious woods, and the spoil of his many campaigns, he built this temple, and placed in it the statue of Nergal. The text concludes with the usual petition to his ancestors to respect the records here deposited.

In the south-west portion of the mound was found a deep well of ancient construction, and communicating with it and circling the whole of the pile, the explorer found a series of broad aqueducts or water-channels. The smallness of the stream and these water-conduits lead to the supposition that the temple was surrounded by groves of trees and gardens. Interesting as the discoveries on the southern portion of the mound were as restoring to us a most interesting Assyrian edifice, they are far surpassed by the monuments which were uncovered at the other extremity. The brazen fragments which had first attracted the attention of Mr. Rassam were discovered on the side of the mound, and a further search laid bare the interesting monuments of which they formed part.

Carefully removing the accumulation of *débris*, Mr. Rassam uncovered a strange brazen monument, which, as it lay thickly corroded with age and crushed and bent by the weight of earth above, was utterly beyond explanation. Long scrolls of bronze, more than 8 ft. in length, some perfect, some broken, but all thickly encrusted with oxidation, and crumbling with exposure to the air, massive caps of brazen-plated posts, and other fragments, all indicated that here had stood some grand trophy of Assyrian kings.

Owing to the graves upon the mound, excavations could not be carried out in so systematic a manner as could be desired, and so, instead of

* The ancient name of Assur.

laying bare all the surrounding space, Mr. Rassam was only able to cut around a series of test trenches. By means of these, he discovered a second mass of bronze fragments, evidently forming a similar trophy to that discovered at first. This second object was discovered about 70 ft. east of the first, and other trenches brought to light the marble platforms of a third and fourth object of a similar kind. It is much to be regretted by all who would study the archæology of this interesting site that the space could not have been entirely uncovered so as to give the relation of these great brazen gates, for such they prove to be, to each other and to the adjacent edifices. Some idea of the terrific confusion of the remains may be gathered when we inspect the first restoration of these brazen portals, as drawn by Mr. Rassam from local study with that which has now evolved itself after the labour expended on the remains by Mr. Ready, of the British Museum. The extraordinary object resembling a set of signal arms, without utility or purpose, has given place to a pair of well-proportioned brazen gates capable of almost complete restoration, with posts, caps, &c., in perfect harmony.

Fortunately, although crushed and bent, and thickly covered with oxidation, these gates were in bulk complete, and now that by patient toil they have been cleaned, we are able to form a very full idea of their appearance.

The framework on which the brazen plates were nailed was of cedar or pine, and consisted of two large folding-doors, each leaf of which was 22 ft. high by 7 ft. wide. These leaves were joined to the massive posts required to carry the ponderous mass, which were 1 ft. in diameter, and pierced throughout with a wrought-iron core, being crowned by massive wooden caps. The whole of the framework, doors, posts, and caps, were covered with plates of bronze, those on the doors being richly worked, while the caps and shoes of the posts were covered with beaten metal. The decoration of the doors was by a series of long bronze bands, 2 ft. wide and 8 ft. long, which were laid horizontally on both door and post, and secured by brazen nails. These scrolls were each divided into two horizontal friezes of sculptured work, divided by a narrow band of plain bronze, studded with the rosettes which decorated the nail-holes. These bands of relievi were about 9 in. wide, and were treated in *repoussé* work, finished with a graving-tool. As there were seven arms to each leaf of the double doors, we may suppose that a short space intervened between the plates, showing the rich polished cedar backing, which harmonised well with these works of art.

These stately brazen portals, which, twenty-seven centuries ago, fresh and bright from the metal-worker's hands, swung to admit the conqueror home, may now take their place in that long list of Triumph's records raised by victor kings. The stately halls of Karnak, the obelisks and pylons which spoke of the victories of Egypt's lords, the columns and triumph-arches of Roman victors, now find a fellowship with this Portæ Triumphalis of Shalmanesar, whose brazen surface portrayed in vivid tableaux the triumphs of the warlike king.

This long line of rich, worked bronze, wherein are figured all the triumphs of the great king and his heroic soldiers, may now take its place alongside of the great war panorama of Seti Meneptah in the halls of Karnak, or of his son Rameses II. Indeed, in the long series of pictured victories here set forth, and accompanied by short inscriptions which explain their meaning, we have a close resemblance to the sculptured tableaux of Seti I., where the scribe, with his ready style, aids to send forth the record of his master's deeds of valour. Here, in the historic scroll of Shalmanesar III., which was completed shortly after his 9th year, B.C. 851, we have set forth in regular sequence the events of nine years of his reign. Here march the armies forth to war, bright in arms and armour, with prancing steed and rumbling chariot; there in the camp they rest, after hard-won fight, and captive kings render homage to the victor.

In other scrolls we see portrayed the siege of rebel cities, battles in rugged mountain passes, or along the river bank; here sea-bound Tyre and Sidon, render tribute to the victorious king; there Hittite, Carchemish, or rock-built Armenian towns pour their rich gifts in homage at his feet. The long winding ribbon of sculptured tableau which winds around the Trajan column has furnished much of interest to the students of the legions of Rome, so now the scrolls from Ballawat portray in a similar, though fuller manner the *matériel*, discipline, and system of the hosts of Assur.

Space will not permit us to deal with the numerous places of interest in the rich series before us, but as the sequence is so well preserved and so instructive, we will in this first notice of the royal panorama select those scenes which illustrate the Syrian wars of Shalmanesar, reserving the Armenian and other campaigns for a future notice.

Syria and Assyria.

The latter years of the reign of Tiglath-Pilieser (B.C. 1120) saw the sun of the early empire past his zenith, and sinking slowly down and giving place to the gloomy night of depression and trouble. This decay of the Assyrian empire must have been rapid, as is always the decay in Oriental rule. As in the human frame, when poison enters the blood, quickly it spreads over the frame, until it reaches the heart, and death is victor. So with an empire: the poison of sedition and rebellion, quickly spread by the hot blood of popular uprising, at last strikes the royal heart,—so dies an empire. With Assyria dead or lying in servile torpor, we must turn to other lands to gain the tesseræ with which to build the mosaic of the history of Western Asia. Less than half a century saw the fall of Assyria, and around her rose a fringe of states. Westward we turn. Those strange Semitic colonists who centuries before had wandered forth from Egypt, and conquered the fertile plains of Canaan, were now growing into a wealthy commune, forming the link between the rich ports of Tyre and Sidon and the Nile Valley. David, the son of Jesse, had given them a capital in the rock-built Jebus,* now the "City of Peace," and his all-wise son, the rich and enterprising Solomon, had spread his influence far and wide, from the sea-coast to the river Euphrates. Tyre, under Hiram, was rich in its merchant princes, and the Syrian kingdoms of Hamath, Damascus, and Carchemish form important factors in the polity of Western Asia. The division of the Hebrew kingdom on the accession of Rehoboam but added another State to the Syrian confederation, which formed a cyclopian barrier, closing the sea from the armies of Assur. It was this homogeneous mass of states which faced the founders of the middle empire, and which at last broke before the iron bands of Assur.

Assur-nazir-pal (B.C. 885), the warlike father of the king whose record is before us, had cut his way through the Syrian lines to the shores of the Sea of the Setting Sun.

"In that day, also, to the slopes of Lebanon (*Labnana*) to the Great Sea of the land of Phœnicia (*Akharri*) I ascended. In the sea my weapons I flashed. Victims to the gods I carried.

Tribute of the kings of the seashore of the Tyrians, Zidonians, Gebalites,† Makhaltai, Maizai, Kazai,‡ and the Phœnicians, people of Arvad who dwell in the midst of the sea, I received silver, gold, tin,§ copperplates of copper, woven dresses, precious woods, and teeth of the dolphin (*nakhari*), the offspring of the sea as their tribute I received."

Such was the result of the expedition of Assur-nazir-pal in B.C. 875, which broke the Syrian confederation for the time, and once more Assyrian weapons, bright with the gleams of victory, flashed on the blue waves of the Mediterranean. But it remained for Shalmanesar his son to crush the league and strike terror into the heart of allied Syria; this he did by the great victory of Kaskar in B.C. 854.

Shalmanesar came to the Assyrian throne in B.C. 859, and, like his father, he at once plunged into glorious war. His first campaign seems to have been a tribute-gathering expedition; and it was at the close of this march to the shores of the Great Sea that the Phœnician cities rendered him tribute and service, and vividly the artist has worked out for us in the brazen scroll the details of a scene which forms a mile-stone on the path of civilisation.

"The Tribute of the Ships of the Tyrians and Sidonians,"—such is the explanatory gloss written by the scribe above his brother artist's picture.

Here we see the Phœnician city built on a rocky island a short distance from the shore, fulfilling exactly its description by the Assyrian scribe, "Tyre in the midst of the sea." The city is surrounded by a high wall, with buttress towers, both wall and tower having serrated battlements of the type usually found in representations of Syrian cities. The towers which flank the gate facing the main land are more lofty and of greater strength. From this gate there slopes down to the sea an inclined way, which formed the landward wharf or quay; down this the artist has represented the Tyrians bearing tribute offerings to the ships, which transport them to the main land. With ingenuity worthy of the inhabitants of the Celestial Land, the artist has included in one pair of individuals,—male and female,—a typical representation of the inhabitants of Tyre. This pair come forth from the city gate, bearing heavy baskets or trays, with ingots of precious metal, to the ship beside the quay. But here the conservatism of space ceases, and with very considerable freedom the artist has placed before us the whole scene which took place. The Tyrian ships pass to and fro from the main land bearing the tribute. One we see alongside the quay being loaded, another is just being drawn on shore by some of the carriers employed by the Assyrians. The boats differ much from the Phœnician ships, as figured in the sculptures of Khorsabad, or of Sennacherib when repressing the flight of the Phœnicians to Cyprus,* or those of the Mediterranean pirates represented in the Egyptian paintings and sculptures. With high-carved prow and stern, and of shallow draught, they resemble in many respects the shore-boats of the Levantine ports, or the Venetian *gondola*, of which they may have been the types. They are rowed by two men, one at each end, with broad-bladed and curved oars. We may, therefore, conclude that here we have not pictured to us the "black ships of the Phoinikes," but only shore-boats. On the shore we see the Assyrian king awaiting the procession of tribute-bearers, which is being marshalled into its proper order by the soldiers. Carriers bring up from the ships the trays of precious metals, the bales of cloth and fine-woven linen, the brazen bowls and caldrons, and each is placed in orderly sequence by the soldiers of the conqueror.

The Assyrian host is drawn up on the shore, probably on the site afterwards occupied by the Roman Palæ-Tyrus, and the king, surrounded by a brilliant group, has stepped from his chariot, and stands in strict conformity with the courtly etiquette awaiting the deputation of submissive Tyrians. Among the attendants round the royal person we see the eunuch, who holds the rich embroidered umbrella over his royal master's head; the armour-bearer, who carries the royal bow in its leather or skin case; the scribes, and military commanders. In the rear of the group are picked troops surrounding the royal chariot, with its richly-caparisoned steeds. The king is clad in his long flowing royal robes, rich with embroidery and gold, perhaps the produce of some Tyrian loom. Before him come the tribute-bearers, headed by the princes of Tyre, who are introduced by the attending Assyrian officers, and behind follow the tribute-bearers.

A train of eight men bear the bales of dyed garments, folded, and bound with cords. Here are the rich robes similar to those Hecabé stored with cared as the produce of Sidonian women.† Blue robes, as garments clothing the statues of the gods of Assyria, are mentioned in the earliest days of the Babylonian empire, and in the legends of the hero Isdubar. Next follow the bearers of brazen cauldrons, the work of the metal-founders of Phœnicia, the cunning Sidonians. Gold, silver, and tin, in ingots and bars, are carried by the remainder of the train, and help to swell the "tribute of the ships of Tyre."

It should be noticed that the fragments of bronze, with Tyrian and Sidonian tribute-bearers, in possession of Mr. Rassam, must belong to other scrolls, or even to a later pair of gates, as the brazen picture now before us on these gates has come down uninjured.

Considered historically as an event in the history of Assyria, the tribute service of the Tyrian princes here portrayed is important, but how much does its value increase when we see it as an event in the history of civilisation? Here we see the practical, war-trained Assyrian a rich patron of the arts, and a lavish purchaser of the wares of merchants meeting

* 2 Samuel v. 6-10.
† People of Bylbus.
‡ The Kash-kash of Egyptian inscriptions.
§ Tin called *kastaritu*; the Greek *kasiteros*, perhaps from Britain.

* See Layard, Mon. Nineveh, series i., plate 71.
† Iliad, vi., 289—91.

the princes of the Trader-land. The acute Phœnician trader saw in his victor one who would purchase his wares gathered from the shores of distant lands. Year by year he came to Calah, or Nineveh, his sons and young men worked in the foundries and workshops of the royal patron of the arts, or studied in the schools of the priests the learning and wisdom of the Chaldean doctors. To distant lands they in their turn bore the learning gained, and the wisdom and wealth of Assur were by them spread on the distant west. In this sculptured plate now before us we have the representation of a great event, not only in the history of the Assyrian empire, but one which forms a landmark in the sands of time. There are other scenes in these Syrian ruins which must be withheld until a second notice of this rich work of art. Here, step by step, we can trace the progress of that grand victory-crowned campaign which in B.C. 854 broke for ever the great Syrian league, when Ahab, Benhadad, and the kings of Hamath and sea-washed Phœnicia made one last stand against the iron bands of Assur. The description of these scenes, and others connected with them, will form the subject of the next notice of the Brazen Gates of Shalmanesar.

THE EMPLOYER OF LABOUR AND THE GOVERNMENT.

THE arguments employed by the very important deputation of the employers of labour who, on the 9th instant, waited on the Prime Minister to urge upon the Government the withdrawal of the Bill introduced into the House of Commons by the Attorney-General respecting the liability of employers for injury sustained by their servants, afford a pregnant comment on the remarks we offered to our readers on the subject (see p. 299, *ante*). When, at the commencement of the session, the matter was first brought under public attention, the arguments of those who wished for a change in the law were almost exclusively put forth. We then intimated that there were two sides to the question; and that any attempt so to strain the fair responsibility of the employer as to disturb the true balance of the scales of justice could not fail to be mischievous to the employed. The employers themselves have now brought their own case before the public, in the serious form of a protest addressed to the Prime Minister. Without attempting, for the moment, a further judicial investigation of the question, it is desirable to call attention to the contention of the employer.

The first speaker was Mr. Knowles, M.P., the chairman of the Coal Trade Association of Great Britain. He spoke, no doubt, from the point of view of a single trade; but it is a trade which, in 1875, employed 525,843 persons in the collieries alone; to say nothing of the large number engaged in the carriage, distribution, and sale of coal. In 1872, Mr. Knowles reminded the Prime Minister, the Mines Regulation Act became law; a most stringent measure, by which the agents and managers of mines were rendered liable to fine and imprisonment, with hard labour, for dereliction of duty. So stringent was the Act that a manager could not be employed until he had undergone an examination, and possessed a certificate approved of by the Home Secretary. It was the feeling of the masters, as expressed by Mr. Knowles, that it would be a very cruel thing to put any further responsibility on the coal trade. Experience had taught the employer, said Mr. Knowles, that whenever disasters of a fatal nature occurred in the mines it was always found upon examination that they might have been prevented if proper precautions had been taken. It is most probable that we have but an imperfect report of what Mr. Knowles actually said, as the argument, thus baldly stated, tells rather against than for, his own object. But what we conceive to be the true view of the case, as far as the operation of the Mines Regulation Act is concerned, is this. The safety of the men depends on two elements, namely, the care and precaution of the masters, exerted through the managers, and the corresponding action of the individual miners. As it has been hitherto found, wherever investigation was possible (such, at least, is the statement) that explosions, which are the most fertile causes of fatal injuries, have almost invariably arisen from the fault of miners themselves, and from their breach of the regulations of the mines, it is not against the owners that any increased stringency on the part of the law should be invoked. That, we apprehend, would be the position of the owners of collieries. It cannot be denied that it is one of a grave nature; but another consideration occurs to us, on reading the remarks of Mr. Knowles, which is one that affects all parties alike. The manager of the coal-mine, according to the provision of the present law, is in a position of personal responsibility of a grave and serious nature. If to this be added the further responsibility of having to respond to any claim against the owner for damages in case of accident, the manager will be placed in a position so ambiguous that it may prove difficult to induce men of sufficient character to undertake it. The first object of men and masters is, or ought to be, one,—namely, to avoid disaster. That the Legislature have sought to attain by throwing a certain onus on the managers. The idea of avoiding disaster is one thing, and the idea of obtaining compensation is another. Of these, one is a national, the other a personal, interest. Everything that would tend to divert the energies of all parties employed to the latter, rather than to the former object, would be an injury to the most important interest, and this the Employers' Liabilities Bill is, in the opinion of the employers of labour, calculated to effect.

Mr. R. Baxter approached the subject from a wider, but not a less exact, point of view. Millions of capital, he pointed out, had been invested under the existing state of the law. Thousands and thousands of men had been engaged upon that basis. If, as under the proposed Bill, the opposite of the present state of things was introduced, any defaulting workman would at once be able to injure his fellows and to ruin his employers. Thus, supposing three hundred men to be lost by an explosion, in addition to the very serious injury to his property (caused perhaps by a single miner resolving to indulge himself in "a smoke," contrary to regulation), the mine overseer might be called upon to pay 300,000*l.* as compensation to the families of the men killed. Such a measure would effect an entire revolution in the relation of capital and labour. It may be added that it would be a revolution which could have only one out of two results. It would either drive away solid realised capital from industrial employment, leaving open the door, either for co-operative associations, which have not hitherto permanently succeeded in the conduct of such operations, or for rash speculators," whose action on industry could hardly fail to be ultimately ruinous; or, on the other hand, it would compel all owners of such property as incurred risk of the kind, to contract themselves out of the danger, and to make it a part of their agreement with the workmen that the provisions of the new law should not be applicable to that special case.

Mr. Robinson, the president of the Federation of Employers of Great Britain, struck a new keynote, and one which, if it could have been struck by the opposite party, would at once have been accepted with acclaim. He considered that free trade should exist in reference to the employment of men. It is true that this view of Mr. Robinson is diametrically opposed to the general action of trade unions. But the question is, after all, Is free trade a humbug and a delusion, or not? and, if not, why are the workpeople, who generally have the causes of danger in their own hands, to apply for protection against the masters, who have not?

We shall not attempt either to estimate the effect which these representations are likely to have upon the Government or upon Parliament, or to anticipate the replies which may be adduced by the advocates of a change in the existing law. But we point with satisfaction to one thing which was suggested by several speeches, and which has our most hearty good will and support,—that is, the introduction, or rather the extension of the system of mutual insurance. The chairman of the Great Western Railway stated that his company paid the handsome contribution of 15,000*l.* a year to aid the self-helping associations of their men. Any tentative legislation,—and no new Act of Parliament on the subject can be anything but tentative,—that tended to stop such solid benefits to the workpeople as subscriptions of that nature, must involve much loss and suffering for very questionable benefit. We urge upon all parties to turn their attention to a ground on which they can meet in common. There can be no question whatever, supposing a given sum,—take it at 100,000*l.* per annum, or any other figure,—has to be paid by the employer of labour in one of two ways,—in which way it would be of most advantage to the country, as well as to all concerned. Let us regard it, on the one hand, as extracted by the courts of law from the pockets of the masters for compensation for fatal accident, or, on the other, as freely offered in subscription for mutual assurance. In the first place, a price of life and suffering, somewhat equal to the amount of the fine, must be previously paid. In the second case, not only would the money be paid without a contest, but the worst cases of demand for its application would be in all probability obviated. The more the *status* of the working man is raised; the more self-respect, based on a proper sense of the duty and dignity of work, is encouraged; the more good feeling is raised between master and men,—the fewer will be the great disasters. Such, at least, all analogy leads us to anticipate. We shall be very glad to hear of the direction of a serious effort on the part of industrial people to help themselves, instead of running to Parliament on every pinch for help that Parliament is, ten to one, utterly powerless to afford, even if it tried to do so. Heaven helps those who help themselves.

MORE ABOUT PICTURES AT THE ROYAL ACADEMY.

THE long gallery (III.) contains some of the best portraits of this year's exhibition. We have already mentioned the "Gladstone" of Mr. Millais, and considerable, though hardly equal, interest will be felt in Mr. Ouless's portrait of Mr. Bright (183), though we doubt if we should class this as among the artist's most marked successes. It may be that the subject is not a good one in a pictorial sense, the face not presenting the kind of character that is effective in portraiture. It is a thoroughly faithful likeness, studied and finished with great care, and strikes one as a likeness rather than as a picture. Mr. Ouless has a most telling portrait, however, in Gallery V., that of Sir Thomas Gladstone (395), a strongly-marked, thin, nervous face, the energetic expression of which is admirable, and quite out of the ordinary line of portraiture. Among the leading portraits of the exhibition is the group by M. Fantin, in the lecture-room, "La Famille D." (1,030), a group painted in that hard pronounced style and predominance of grey tones which have marked other portraits by this accomplished and original painter. His manner results in an absolute and almost prosaic realism of delineation which nevertheless is removed from the category of realistic painting by the peculiar and conventional tone of colouring. The effect is perhaps rather original than agreeable; interesting as a break in the normal style of portrait-painting, but hardly the kind of representation one would wish to have permanently of one's friends. As a specimen of almost defiant (one might say) realism may be taken the portrait of the Rev. Thos. Stevens, by Mr. E. J. Gregory (276), an artist who made a hit last year by a very clever portrait in the Grosvenor Gallery of a gentleman in a rough shooting-coat, and who seems accordingly to have taken to rough subjects. The painting is original and powerful enough, but seems almost purposely to exaggerate the peculiarities of an obviously peculiar sitter. Still, Mr. Gregory has a way of his own in portraiture, and that is a good deal.

Mr. Jas. Archer, an able painter, has several good specimens of his art. His "Lady Giffard" (264) amongst them, is dignified and easy in style. Mr. Calderon sends a very pretty and successful family piece (268) "A Voyage Round the World," a young party and their mother seated together; the individuality of expression in the children of different ages, and the half demure and staid look of the elder girl, are most happily and delicately rendered. The large gallery contains two or three of the most original things in the Exhibition; Mr. Marks's "Old Friends," for instance (251), where a couple of naval heroes are admiring some battered and historic figureheads of ships, which look most amusingly classical and stolid, each perched on the top of a post. Mr. Orchardson contributes one of the best things he has ever painted, "Hard Hit!" (257), a card-playing scene, where a young Charles Surface is leaving the room after a hard night's card playing, trying to adopt an indifferent swagger; the companions who have been fleecing him look

bad enough for anything; the floor is strewed with heaps of cards. The general style and scheme of colour resemble "Left by the Tide" of last year; it is not a completely satisfactory style, but the painter has made it himself, and done good things in it,—none better than this. His compatriot, Mr. Pettie, is also exceedingly successful this year in a larger and also a more serious picture than is his wont, entitled "The Death Warrant" (220), a large painting, representing the scene in a council-chamber, presided over by a poor young delicate boy-king, who has to sign the death-warrant handed over to him by stern old men, long hardened to such business. There is real and true pathos in the sad revulsion of feeling of the sweet feminine-looking lad, all the more impressive that one feels how historically true it is,—the principal figure, by the way, seems to suggest our own Edward VI., though not so named. It is noteworthy that Mr. Pettie has here managed, almost for the first time, to be perfectly serious over his subject.

Mr. Eyre Crowe has not been very successful in his "Death of Marat" (301); the editor of *L'Ami du Peuple* is odious enough, but Charlotte Corday is weak, and, moreover, has a portentously long head. Near this is a picture appealing (alas, how rare in an English exhibition!) to the most purely cultured and artistic sympathy, "Le Ducat" (306), by Mdme. Henriette Browne. It is simply the figure, seated, of an old man of very pronounced aquiline physiognomy, in black silk gown, examining a gold coin through a magnifying glass. There is not much in the subject *per se* to interest; why is it that we look at this picture with such a feeling of refreshment? Because it appeals to a sense of delicacy of balance and finish little cultivated among English picture-seers, and is completely above the mere prosaic interest of every-day life to which alone so many English painters appeal. Compare it, for instance, with Mr. Leslie's very pretty work in the same room, called "Naughty Kitty"; each of them represents an imaginary and trifling incident of real life, but the English painter's work smells of bread and butter; it seems painted to amuse children and to be "chromo-ed" for an illustrated paper; the good-looking girl may be any Miss Lucy or Miss Clara out of any steady-going respectable parsonage, without an idea beyond housekeeping and lawn tennis; the other is a figure that interests and fixes one from its profound significance of character and manner, as well as for dignity, breadth, and completeness of style in the whole work. Mr. Boughton's "Resting-place" (330), is one of the best things he has done, in which sadness and indifference sit side by side as they do in life; which, moreover, is most effectively composed, and shows, besides the admirable character in the figures, very delicate and true painting of an ordinary bit of English roadside landscape. Mr. Marks's diploma work, "Science is Measurement," an old naturalist making a careful drawing of an extinct bird's skeleton, is in his best style of dry humour. Mr. Elmore's study called "Sabrina" is a good piece of figure-paiuting, but it is a pity he did not call it merely "study of the nude": as an ideal of Milton's lovely and chaste creation it is little short of revolting.

Gallery V. has for a centre-piece Sir John Gilbert's big canvas "The Return of the Victors," in which a number of the hectoring fellows on armoured horses, whom he has so often inflicted on us, are all filing past in procession, and let us devoutly hope we have now seen the last of them. Sir John has shown us lately how much better and less common-place things he can do, and it is too bad of him to fall back upon these worn-out tinsel properties again. The picture of the room is the "Sea-Birds Resting-place," by Mr. Peter Graham (447), a perfect triumph of realism in the painting of the slippery rocks and the cool green water stained by the black sea-weed floating below; one would like to sit on a ledge there and listen to the "lap" of the water. A very admirable portrait by Mr. Storey (421) is to be found here, a three-quarter length of a thin-featured refined young woman in a blue dress; there is a great delicacy of feeling in this, and very fine execution. Mr. Bridgman's effective archæological picture of "A Royal Pastime in Nineveh," proves deservedly very attractive; the architectural detail is most carefully studied, and the lion just loosed from his cage equally so.

Mr. C. Napier Hemy strikes somewhat of a new key in his "Vespers" (468), where a boat winds slowly along brown water under the high walls of a town: the effect of the whole is fine and solemn, and answers to the suggestion of the title. We do not know what Mr. Britton Riviere is at with his large picture, and cannot care for Mr. Woodville's "Before Leuthen," which has been talked of a good deal, but hardly tells its story, and contains very curiously-drawn horses. Some little things in the room are very good; notably a little landscape by Mr. W. S. Jay, "Showery Weather" (512); a "Study," by Mr. G. Clausen (518); "A Stranger in the Field," by Mr. Meyerbeim" (502), an admirable cattle painting; and "The Duet," by Mr. R. M'Gregor (513),—a children's scene. We may also mention Mr. Hodgson's work, "The French Naturalist in Algiers,"—a good specimen, but hardly the best, of his own style.

The centre place of Gallery VII. is filled by Mrs. Butler's principal work, "The Remnant of an Army," the one man and horse who found their way back to Jellallabad after the destruction of a whole army of our troops in 1842. The man and horse are in the centre of the picture, the horse staggering and ready to drop, the rider apparently holding on to the pommel of the saddle with both hands; in the distance a party come out of the town gate to meet him. This is no commonplace work, and well maintains Mrs. Butler's reputation. Mr. Ouless's "Dr. Ridding" is an excellent portrait of a head-master who seems well calculated to rule, and there is a vigour and "go" in the style of the painting, which suit the character of the head. Mr. Croft's battle-picture, Napoleon leaving his carriage at Genappe, in order to get away on horseback (which, it seems, he did in such a hurry as to leave his hat behind), deserves more cordial mention than it has received in some quarters; it is a very good and real fighting picture, the figures of the sturdy cool old warriors of the old guard presiding quietly over slaughter in the foreground, and keeping a margin for the Emperor, are as characteristic as possible, and the attitude and expression of Napoleon, betraying no feeling in his face, but with his passion indicated by the clenched hand, is exceedingly good; the whole of the details are well studied. Mr. Brett's large painting of Conway, from the sea, with a rather affected title (643), is one of the most powerful things in the exhibition: possibly the landscape is almost too strongly made out, but the clouds are grand, and it is worth while to specially notice the wonderful reality of the contrast between the sandbanks and the water from which they rise, the banks so solid, the water so absolutely transparent and liquid, that it is difficult to believe this is but a surface of pigments.

In the lecture-room the big works are not the best, it we except Mr. Wirgman's large portrait of Mr. Marnock (951), which is well painted. Mr. Joseph Clark has a small picture full of character, "Jeane's Wedden-day in Mornen" (945), only spoiled by the uninteresting and rather foolish look of the bridegroom; the other figures are admirable, especially the children admiring the modest-sized wedding-cake. Mr. G. Reid has a small landscape, "Norham" (936), down in a corner, well worth looking at; and Mr. Howard Helmick, whose name we have noticed in the last year or two as an admirable painter of semi-humorous scenes on a small scale, has a very clever little work, entitled "The Theologians" (1,031). A curious fanciful piece by Mr. Arthur Hughes, called "The Property-room" (929), contains some most delicate painting, but is rather too vague in its aim and meaning to be quite satisfactory. Mr. Rooke's series of small paintings, entitled "King Ahab's Coveting," seem to us remarkable rather as studies of antique costume and surroundings than of human passion, though there are very fine points; the figure of Jezebel, in the scene where Ahab is rebuked by the prophet, is exceedingly good; a handsome, tall, supercilious woman, utterly undaunted by an attack under which her husband cowers. The artist seems to affect rather an antique style in his painting, which, perhaps, is one reason that he fails to give an impression of reality. Mr. Long's large painting of Vashti we cannot feel interested in.

We can only mention in Gallery X. Mr. Peter Graham's remarkable scene in a deep rift between cliffs eaten into by the sea for countless ages (1386), a grand subject, hardly so well painted as his quieter one before mentioned; Mr. F. Dicksee's large painting, "Evangeline" from Longfellow's poem, which has fine feeling; Mr. Frank Holl's "Absconded" and Mr. Barnard's "At the Pantomime," the latter as two good illustrations of very disagreeable phases of human character, forcibly rendered. We shall say something about the sculpture separately.

THE GROSVENOR GALLERY.

AMONG the first things which we come to in going round the larger gallery at the Grosvenor are some oil sketches of morsels of building in Italy and elsewhere, by Sir F. Leighton. These are charming bits of architectural illustration from Capri, from Granada, from Damascus, and form, we believe, specimens only of a numerous collection of similar studies of this eminent painter, which must be of great interest to architects, and of which, we hope, more will be seen in future exhibitions. The system of grouping the works of each contributor is adhered to in a good many cases, though not entirely. Mr. W. B. Richmond, who seems now to have entirely transferred his allegiance from Burlington House to Bond-street, is very well represented by several works, some of them of exceptional interest and power. That which strikes us most is the half-length of a young girl in a broad-brimmed hat, under the title, "A Study in Light and Shade," the face being partly in deep shadow from the rim of the hat. The result is a remarkably successful and delicate study of the modelling and tones of the face under half lights. The portrait of Miss Ada White Thompson is a large powerful representation of a stately figure in white dress, seated, treated with statue-like breadth and simplicity, and forming a very dignified and monumental style of portrait. A small painting, under the title "Phydile," illustrates a passage from Horace,—"Rustica Phydile" standing naked before an altar in the forest, with hands uplifted, in an attitude reminding one rather of the well-known statue of the "Boy praying": the figure is rather long-legged, and strikes us as deficient in feminine character and build; indeed, at the first glance one almost takes it for a male figure; but though hardly very beautiful in regard to form, the little work is quite fascinating in its purity and delicacy of colour. Mr. Alma Tadema's one contribution to the exhibition is a portrait of Herr Henschel, seated at the artist's celebrated piano, manufactured from his own designs by Messrs. Broadwood: the singer is in the act of accompanying himself in a song. The likeness is good, but the execution strikes us as hard, and not one of the most successful of Mr. Tadema's productions in regard to artistic effect. Mr. Dicey's small painting, entitled "Relics of the Past: Arabs in the Museum of Algiers," seems like a hint borrowed from some of Sir F. Leighton's portraitures of Eastern domestic architecture; the interest is not so much in the figures as in the execution of the architecture and in the foliage of the broad-leaved plants, with the light half seen through them. Mr. Carl Haag's "Nubian Warrior" and "African Beauty" show his usual well-known characteristics in works of this class in their best form. Miss (?) Stuart Wortley's "Charing Cross Bridge at Midnight" is an echo of Whistler, so far as general effect is concerned, in which it is very successful; but the details and proportion of the bridge are incorrectly represented, and not in proportion with each other, which is a deficiency of some importance when the bridge occupies so prominent a place as a foreground object. At the end of the room the two sides of the wall are occupied by large companion pictures by Mr. W. G. Hills, "Ophelia and Laertes," and "Nymph and Young Satyr," of which the latter is the best, fine and rich in colour, and in a large antique manner in keeping with the character of the subject; the Ophelia is less powerful in style, and the faces are deficient in marked character. In the centre we have Mr. Richmond again, represented by a strange-looking and sufficiently original painting of "Sarpedon borne away by Sleep and Death," a painting which, like Mr. Burne Jones's Pygmalion series, strikes one as a Gothic treatment of a classic legend. Traditional classic grace is quite ignored in it; Sarpedon is doubled up with his boots (we should say greaves) towards the spectator, his legs supported by one shadowy figure, while the other, with wings pointed parallel and vertically, draws him up by the shoulders; which is Sleep and which is Death we hardly take upon ourselves to pronounce, but the work, though very odd, and, at first sight, indeed, almost ludicrous in effect, improves on acquaintance, and we especially grow sensible of the success with

which the feeling of motion is imparted to the group, who seem almost to glide upwards past the clouds which form the background, and through which they are progressing.

Mr. Herkomer's large water colour, called, rather pretentiously, "Light, Life, and Melody," we have already mentioned when on private view elsewhere. Mr. Walter Crane's "Sirens" are graceful but weak, with nothing in them to tempt Ulysses' crew to jump overboard. Various other things in this part of the room may be passed over, just noticing a charming little night effect in Cairo by Mr. Albert Goodwin, and congratulating Mr. Strudwick on having given up imitating early Italian masters and painted a picture with a certain beauty of its own, though it is not Keats's "Isabella," but a lady of the modern artists' favourite type, with the usual red hair and long chin. Mr. Herkomer's portrait of the Poet Laureate, larger than life, and painted in water-colour, is not satisfactory, and certainly not flattering to its subject. As to the wisdom of adopting water-colour for works on a large scale we can see nothing to be gained by it, though, of course, the experiment is interesting, and in the larger picture of peasant life mentioned just now the force with which some of the accessories, such as the tankard on the table, are painted is remarkable, considering the medium, and shows a great success in giving to water-colour the look and the force of oil painting. Still, *cui bono?* The oil painting would probably have been better. Mr. R. B. Browning's picture will certainly *not* do, and the less said of it the better. Under it is a very pleasing specimen of Mr. Millais's best style of lady's portrait, a three-quarter figure in profile, dignified in attitude, fine in colour, thoroughly ladylike in expression; he has been fortunate in his sitter and has done her full justice, to all appearance. Then we find ourselves opposite to Mr. Whistler's "arrangements," of which the portrait of Miss Corder is almost as good, in its very different way; the lady stands with her hat in her hand, and in an attitude of immediate movement, as if just about to walk away from the spectator; her back is nearly turned to us and her face seen in profile over her shoulder; the figure is full of character, life, and animation; would it have been any the worse for being finished in detail? Surely not. This work gains the more by contrast with the artist's other large portrait of an exceedingly impudent-looking girl in "tights" and with a skipping-rope, and "*chic*" written in every line of her face and figure; that it is one of the most disagreeable and vulgar things we ever met with in an exhibition is an opinion which not even the fear of farthing damages can hinder us from expressing. Passing a good many things of slight interest (for with all respect for Mr. Legros's talent or genius we cannot find ourselves interested in his "Jacob's Dream"), we find at the top end of the room a group of Mr. Watts's intellectual and thoughtful works. These, however, we believe are no new paintings, unless the "Orpheus and Eurydice" be so—we do not remember to have met with it before. This is a fine and very dramatic treatment of the old fable, the moment chosen being that when Orpheus has just made the fatal look round, and immediately the life has departed from his beloved companion, and she hangs from his arm, put round her waist to support her, a limp and lifeless body. The instantaneous transformation is so forcibly given, the look of utter lifelessness in the body of Eurydice so complete, that we almost expect to see her glide from her husband's arm and sink to the ground: it is not often we see so vivid a realisation in painting of an instantaneous incident. The face of Francesca, in the picture of Dante's ill-fated lovers is exquisitely pathetic; and if the colour in either work (the Eurydice more particularly) is somewhat dead and ghastly, this is not out of keeping with the nature of the subjects. Mr. Linton contributes several replicas in oil of works in water-colour which have been seen elsewhere, and of which it need only be said here that we prefer him in water-colour, and believe that to be his "mission."

Lady Lindsay, besides other interesting works, contributes a very good likeness of Signor Piatti, a head only, in which the somewhat grim iron-grey head so familiar to frequenters of classical concerts is given with great truth and realism of character. M. Tissot's group of works strikes one quite curiously amid an exhibition containing so many paintings of which the aim is so utterly opposite to that of this painter. He has luckily not repeated his unfortunate attempts at moral allegory; indeed, his paintings are about as thoroughly destitute of all moral as could well be imagined, and we could even wish that his type of realistic life were more pleasantly chosen; yet there is a certain satisfaction in seeing a painter's aim, though not a high one, so completely realised. The three people represented in "The Rivals," two elderly men conjointly flirting with a red-haired young woman, are all thoroughly odious, but their "odiosity" is so completely life-like that one cannot help being drawn to it; and it may be a question whether even this vulgar type of girl, being a real human figure, is not a sort of refreshment after the number of lanky, sentimental, impossible damsels of whom the Grosvenor is the chosen home. The best and the most pleasing work among those of M. Tissot is "Going to Business," the elements in which consist of St. Paul's Cathedral, a Hansom cab, its occupier, and the *Times;* the cab drives straight at us into the front of the picture, and is admirably given, and we opine that the gondola of London is a sufficiently characteristic and typical article to be quite worth painting well once in a way; the picture may be of value to future historians, when the Hansom has become as classic as the *biga*. The part of St. Paul's which is seen and forms the background is also, it is almost needless to say, a model of correct and solid painting of architecture.

One feature among the sculpture exhibits in the gallery (neither many, nor for the most part of much importance) is of interest, as indicating that there is a disposition among other painters to follow up Sir F. Leighton's lead, and to lay a hand on the sister art. Mr. W. B. Richmond has contributed, besides his paintings, a life-size bronze figure of a man running at the top of his speed, balanced on one foot, the other outstretched behind him, the whole figure leaning forward in the impulse of the run. The aim of the work is realistic, though there is perhaps a certain intention of giving an antique type to the face; there is nothing to call remarkable in it as a work in sculpture, but it serves to show that as far as technical workmanship is concerned there is nothing to prevent the combination of two arts under the hand of one artist in the present day, in the manner so common in the great period of Italian art.

If it were once fully recognised that this line of demarcation between classes of artists has no absolutely necessary existence, and that power of drawing need not necessarily exclude power of modelling, the practice of modern art would no doubt assume a very different aspect, and the result would in all probability be very much in favour of originality in artistic production, and would tend to habituate our artists to wider views and sympathies, and prevent their ideas travelling so much in a groove as those of many of even our ablest painters apparently do. Something like this has been suggested by Mr. Browning (whose works are so full of pregnant art criticism incidentally introduced), in the last act or scene of his well-known dramatic poem, "Pippa Passes." But the painters must not have this all their own way. Which of our sculptors will give us a picture?

"TRANSITIONAL."*

WHAT is there in a name, that I should detain you on the threshold of my subject?

In this case, however, there is a good deal in the name, and something that might be misleading, although more that is appropriate; so that some preliminary explanation of it appears necessary.

All architecture, so long as it was a living art, was in reality "transitional"; it only ceased to be such when its vitality vanished, as it did at the close of the period to which this transitional was the introduction. Still, from our standpoint, as heirs of all the centuries, we can note certain links in the chain of its progress as having been exceptionally "transitional,"—more from their relation to the preceding and succeeding links than from any intrinsic peculiarity of their own.

It is in this sense that the period I have to explain to you has specially obtained the above name, and that its applicability to it has become recognised, and the name consequently familiar.

The late Mr. Edmund Sharpe, who, if not its original sponsor, was its most loving and devoted exponent, has aptly called it "the tomb of the Romanesque and the cradle of Gothic."

While again reminding you that all architecture, speaking of it, historically, as a living art, was an unbroken sequence, with but one cradle (Greek) and but one tomb (Renaissance), I will adopt Mr. Sharpe's definition, so far as to allow that the "Transitional" was the link that stood between the Romanesque and the Gothic, and I shall endeavour to make its character, as such, and its connexion with its predecessor and successor, as clear as I can; and therefore now proceed to point out whence this "transition" sprang and whither it tended.

Greece was the cradle of refined systematised architecture, the elements of which had, however, existed in a state of chaos for ages previously throughout the East. Grand and elaborate works had, it is true, been built before in India, Persia, Assyria, and Egypt, but in neither of those countries had any style been developed which the world could accept as a model to work upon.

The purest and most perfect art of its kind, though not the most original or vigorous the world has seen, was unquestionably that of Greece. In its crucible the heterogeneous, unassorted elements of the early Oriental world were fused and refined, and they issued thence in a form systematised and adapted to the requirements of the time and clime of that highly-gifted nation, and they became an acknowledged canon of taste for all ages to come.

The Romans had no art of their own, and that of Greece became degraded in their hands, and applied as a mere dress to constructions with which it had no affinity. They added the arch, however, as their contribution to the repertory of this art. But the Romans spread their system of architectural veneer, such as it was, over the whole of the then known world, and though it fell into decay, together with the Empire itself, it lay, as seed instinct with life, ready to burst forth under the revivifying influence of a new age and circumstances, and to leave, as a husk behind it, the dross with which Rome had encumbered it. That influence in due time was supplied by Christianity.

The art of the ancient world had been intellectual, and it had dealt with the material. Its aim had been a comparatively low one, and within human compass. This had been achieved by the Greeks in a manner approaching perfection as nearly as lay within the power of man to attain. But Christianity added another and higher aim, yet one far more difficult to realise. It sought the spiritual in art, and subordinated to that the intellectual, which had been the final goal hitherto, and it found material elements to its hand in the fragments of the ancient architecture freely strewn around, and strove to mould them to its own wider purposes.

I shall pass but lightly over this portion of its history, and only to show the connexion of the several links in this chain of progress; my object being to point out to you that Christian architecture has been ever in a state of transition from its rise to its close, and that from its nature it could not have been otherwise.

It is true that in its infancy its steps were faltering and slow, but they were sure, being founded upon right principles. The end might have been predicated from the beginning, just as the contrary might have been prophesied of the false system the Romans had grafted upon the Greek life,—vigorous life was the rational outcome of the one, as palsy and death had been of the other.

The Christians set up the fallen columns and entablatures that the Romans had used as masks to their structures for rational supports to the walls wanted to divide the naves from the aisles of the churches they at first built in imitation of basilicæ. As their vaulted construction became complicated, and they found these no longer suitable, they gave each weight its visible support, and thus arrived at the compound piers, &c., which embody the principle that distinguished their architecture throughout, and which has been tersely summed up thus,—"That every artifice of construction must be displayed."

Henceforth it was ever in a condition of transition, though for a long period its progress was slow. Commencing with the fourth century, from the ruins of heathen basilicæ and temples, this Christian-Roman type was modified when transplanted, together with the Empire, to Byzantium (A.D. 476) by the purer Greek and Oriental influences lingering there. It was not till the time of Charlemagne (A.D. 768) that

* By Mr. J. P. Seddon. Read at a meeting of the St. Paul's Ecclesiological Society.

ny great movement took place, though in the ntermediate period, notwithstanding political troubles, foundation was being laid both in the East and West for the time to come. Under Charlemagne the Empires were reunited, and the arts encouraged, and the style of architecture known as the *Romanesque* then grew out of the fusion of the Christian-Roman and the Byzantine. This spread over North Italy and Germany, along the great highway of the Rhine, and became the established style throughout Christendom; though, after the death of Charlemagne, the arts somewhat slumbered again till after the year A.D. 1000, which men had dreaded as the probable end of the world, and till the establishment of the feudal system in place of the preceding anarchy seemed to give them fresh opportunity.

With the eleventh century, Christendom awoke to life, and a change passed over the spirit of the world. Feudalism, with its chivalrous enterprise, was the established order of things in Europe; and the Romanesque style of architecture became a worthy exponent of its character. The conquest of England was one of the most stirring incidents of the century, but one quite in harmony with the age; and the Norman architecture which William and his barons,—ecclesiastical and military,—introduced was a visible embodiment of the spirit and circumstances of the builders. Stately and awe-inspiring were the fabrics of the Church; as haughty and alienated from the people were its priests.

The Chapel of the White Tower of London, the work of William, has a grave dignity in its simple proportions, which bespeaks a need for defence rather than display; and the noble names of Gloucester, Norwich, Tewkesbury, Peterborough, and Durham, impress us by their solemnity and massive character, with but small aid from any details of their ornament.

The twelfth century, however, was ushered in with signs of a still mightier impetus. Those who returned from the first Crusade, which Peter the Hermit had preached (A.D. 1096), brought back wider views and new ideas. At the close of the reign of Henry I., a great and popular religious revival took place, which shook the feudal society, already weakened by internal discords, to its foundation.

The austere Cistercian Order founded by St. Bernard (A.D. 1119) forced reform upon the church. This new zeal found vent largely in the buildings required for the numerous monastic foundations which then became a rage; of these, 1,200 abbeys, and no fewer than 3,000 dependencies, were owned by the Cistercian Order alone, and the other bodies of the Church emulated their example. In London, the cathedral of St. Paul was built upon a stupendous scale, and St. Bartholomew's Church is, in many ways, a typical example of the work of this remarkable period,—as its founder, Rahere, the Court minstrel, was a striking specimen of a class that gave practical expression to the fervid feelings of that time.

Such were the political conditions of the period the work of which I have undertaken to explain; in one sense, perhaps, this is not more specially transitional than others in the history of architecture and art, but yet one that has not without good reason obtained the recognised special title of the "Transition," in that it marks the point of divergence between ancient feudalism and modern progress, between tyranny and liberalism; and, in architectural detail, between the use of the round and of the pointed arch, between the prevalence of sturdy simplicity and elegant elaboration and splendour of detail, between surface ornament basking in light and recessed shrinking into shadow. In brief, it was the link between the old and the new civilisation of Europe.

This period of the "Transition" may be said broadly to occupy the latter half of the twelfth century (1145—1190) and the reigns of our Angevine kings, the Plantagenets, viz., the latter part of the reign of Henry II., Stephen, and Richard I.

Having now given you an historical sketch of the sequence of the art of architecture, I proceed to trace the development of the same more technically.

The Greek Doric order of the trabeate construction, as perfected in the Parthenon, set the canon for architectural proportion, and was suited for its place and purpose. But Christian architects, for other purposes and places, did well to deal, as they did, freely with this type of column and support. They adopted the Roman arch instead of the Greek entablature, and altered the proportions of the column, so that in the sturdy Norman we find it often but two or three diameters high, and in what may be called the weedy Perpendicular its shafts are as "linked sweetness long drawn out." In short, they subjected their ancient precedents wholly to plain common sense, and used them as they needed.

Breadth, horizontality, and repose had been the essential characteristics of Classic architecture, and remained so, to a great extent, until this period of the "Transitional." The characteristics of the Gothic architecture, to which that style was the portal, and which was the logical result of the common-sense principles followed by the Christian architects, were, on the contrary, subdivision, verticality, and aspiring energy. The period of the Transition was that of the struggle between these opposite tendencies.

Dr. Whewell has selected five points of essential difference between Classic and Gothic architecture, which it may be as well to recapitulate, as the details of the struggle upon this Transitional battle-ground.

1. In Gothic architecture, as opposed to Classic, the arch is essential, the entablature not, and the columns support arches instead of entablatures.

2. There are any number of planes of decoration, one behind another,—leading, with several arches under one, to *tracery*, and, with arches of different forms under another, to *foliation*.

3. The weights are divided into as many parts as possible, and these are given to independent supports, whence *compound piers* and *clustered pillars* result.

4. The diagonal pressures of the arch are conspicuously displayed, whence come *buttresses* and *pinnacles*.

5. The dominant lines are vertical instead of horizontal.

The gradual establishment of these new principles at first in the early Christian-Roman works in Italy has been well traced in Okeley's "Christian Architecture in Italy." They had, however, always to struggle in that country (the fountain-head of Classic) with strong local influences, and were never able wholly to assert themselves as they did ultimately north of the Alps. Transferred for a time to Byzantium, and thence to Ravenna, they combined there with strong original Greek and Oriental influences. In the former case the Latin cross plan, the basilican arrangement of nave and aisles, wooden roof, and Roman rounded-edged type of foliage were followed. In the other, the Greek cross plan, domed vaults, and sharp pointed Greek type of the acanthus foliage prevailed.

But the *Romanesque*, developed from both these styles, united distinct features of each, and noble buildings arose in and after the time of Charlemagne, throughout Lombardy and Germany, having the Latin cross plan, with nave and aisles, with Byzantine apses, with semi-domes and vaulted roofs. In these the new principles were carried further, as the requirements of the vaultings to the compartments of naves and aisles demanded, to the limited extent that the retention of the round arch permitted.

The Romanesque did not spread to France till shortly before the time of the Conquest of England, when Byzantine feeling had diminished. Few buildings in that country claim higher antiquity than the early part of the eleventh century, when Rollo, in Normandy helped to build Notre Dame, Rouen, and other large churches elsewhere. The two abbeys at Caen were completed, the one just before, and the other just after, the Conquest; Jumièges in 1067; and St. George's de Boscherville in 1057. Thence the Romanesque was imported to England, where it was wrought out with so distinct and original a character as almost to form a style of itself, nearly free from all Byzantine influence, even its Roman origin being difficult to trace; it became, as it were, a self-contained and distinct style of which we may be proud.

The distinctive features of the details of Romanesque as needed for our present purpose of comparison with Transitional may, then, be briefly summarised thus:—In Germany, where it was purest, as nearest its sources, and grandest in conception, though not most beautiful in detail, numerous towers compose splendid groupings; its naves as well as its aisles were vaulted, the piers were large and plain; cylindrical shafts were not used. The arches were, of course, round only. Transepts occur at both ends of the church, often with apsidal terminations there, as well as to the east and west ends of the nave; plain door and pier arches, as compared with English. The simple zigzag and triple billet alone, out of the vast variety of English ornaments of the class, were freely used, and in the shape of openings many strange forms occurred, such as arches fringed with rudimental cuspings of an Oriental character, and windows resembling in shape the ace of clubs.

In France, the simple basilican type, with the nave and aisles, prevailed, with only an eastern semicircular apse; central towers, and often two at the west end. Among its ornaments we find the zigzag, billet, chevron, nail-head, cable, fret, &c., together with sculpture of Byzantine character, in which the Corinthian capital was imitated, but with Greek, rather than Roman, foliage. Slight projections, recalling antique pilasters, were the only buttresses. The masonry was rude, its joints large, its stones square and axe-faced. It had large circular single pillars, but later square pillars, with shafts attached. The naves were wooden-roofed, with flat ceilings; but the aisles were vaulted.

In England the Early Norman was still more massive than in France, though the later Norman was much lighter than these (as in the galilee at Durham). The great cylindrical pillars were relieved with zigzag and other groovings. It was often most richly ornamented, sometimes with rude, vigorous, grotesque carvings, as at Kilpeck, with a profusion of various simple ornaments, but at others with exceedingly delicate and beautiful work, resembling that in France, supposed to be derived from Byzantium, like jewelry with pearled bands, of which there are good examples at Barfrestone and Patrixbourne in Kent.

In comparison with "Transitional," the windows, round-headed in both, are in Norman, low and broad; the pier-arches plain and square-edged, or with heavy rolls on the edges of one or more of the orders of the arch. The capitals, in Early Norman, are after a very rude Corinthian type, and the later Norman equally primitive, upon the Doric type, which has become known as the cushion capital.

The Transitional style in France has been so well described in the work entitled "Romanesque and Pointed Architecture in France," that I feel I cannot do better than quote the following passage from it:—

"In Normandy, where the intermediate steps by which the First Pointed style attained its complete development are to be traced only by an occasional and indiscriminate mixture of the circular and pointed arch, the mouldings of these, the section of the abacus and decoration of the capital undergoing, for the most part, no transformation, this Transitional epoch possesses very feeble interest, and absolutely no claim to a distinct consideration.

On overstepping, however, the boundaries of this province, no matter in what direction, we discern abundant evidence of a mighty change in the spirit of architectural creations; we discover a class of monuments which conduct us, by progressive and almost insensible gradations, from the first incomplete perception of a new principle of beauty disclosed in the pointed arch, to a system so full of harmony, of splendour, and of grace, that were we not familiarised with the stupendous works the art was still destined to accomplish, we might well believe her to have attained her utmost limits, and pronounce her incapable of sublimer efforts than these her first essays.

The buildings referred to are distinguished by the almost universal use of windows, still round-headed, but drawn upwards into lengthened and more graceful proportions, by pointed vaulting in all, and in many of them by a peculiar eight-celled domical ribbed roof, doorways indifferently circular or pointed, enriched with a profusion of statues in the sides, and small sculpture in the arch mouldings; a characteristic capital of uncommon beauty of design, of fantastic foliage where this is not displaced by small figures; constant invariable mouldings of pier arches; west fronts broken into an infinity of minute particles, and niches occupied by statuary; a lavish use of cornices on the inside as well as externally; of light and elegant sections, supported by corbels of inexhaustible variety and great delicacy of workmanship; an almost entire absence of the ornaments of the first Romanesque era, and in most cases some peculiarity in the plan of the church."

Of the carved work in France there is great variety and character in that of the different provinces, betraying Byzantine and Oriental influences, the latter doubtless through the means of the Crusades. These were all of a conventional character, and not of the original nature of that of England, which was developed from the Norman and a study of natural foliage. There was, however, a profusion of sculpture in France of a highly conventional character, both in figure and costume, also undoubtedly derived from a Byzantine source,—apparently imported paintings. The transitional style in Germany has been carefully dissected in "Whewell on German Churches." Some of its special peculiarities are due to the fact that vaulting large spaces was practised here at an early date. Having vaulted the aisles during the Romanesque period, it was then attempted to vault the naves also, but in doing this difficulties presented themselves, since semicircular arches would only accommodate themselves to the covering of square compartments. Consequently it compelled the naves to be double the width of the aisles, and the alternate piers only carried the nave vaultings; these were distinguished by greater bulk than the intermediate ones, which had only to carry their share of the aisle vaultings.

The light from the small windows of the early Romanesque churches being found insufficient, larger clearstory windows were introduced. In place of the single window which before occupied the centre of each compartment, two were, later in that style, placed near each other, in pairs, so as to reach the central higher part of the arch.

These difficulties and limitations were found to be overcome by the use of the pointed arch, which enabled the breadth of the central aisle to be no longer necessarily double that of the side aisles, and to be oblong in shape instead of square; usually the transverse arch was the pointed one, and the longitudinal ones remained semicircular. Next, both these became pointed, allowing any proportion of breadth and length. Sexpartite vaulting, only possible with pointed arches, became common, with octo-partite at the crossings, and a German peculiarity of transitional vaulting was its usual domical treatment, arising from the diagonal ribs rising higher than the transverse and wall ribs; while an ugly variety of a domical vault, with face-ribs, is frequently to be met with. As to plan, whereas the Romanesque apse had been circular, in the Transitional it was usually polygonal, or the two were combined in the same church. We find apses and towers at both east and west ends, combined with octagonal cupolas or pyramids, and the termination of the towers with pediments on each face and pyramidal roof above is peculiar to Germany, though a few small examples exist in England.

The triforium was during this period developed from a plain blank awkward space occasionally left between the pier arch and clearstory in Romanesque churches, into a fine large open gallery, forming a second story to the side aisle, and used as such.

The clearstory was enlarged, and filled with large windows, sometimes triplets, and others in the curious local fan-shaped openings. Buttresses of small projection, with plain cappings, also make their appearance.

From these details it will appear that, as Dr. Whewell points out, the introduction of the pointed arch was by no means at once accompanied by all the other changes which distinguish the Gothic from the Romanesque. "The old forms and tendencies lingered long, and were replaced gradually, and the Early German architecture offers an image of the conflict and indecision of a revolution which is to end in replacing the prevailing principles by their opposites." It never attained the unity and harmony remarkable in the contemporary work in France; it was disfigured by many features more curious than beautiful; and though often exceedingly grandiose, was deficient in the refinement which in the "Transitional" of England was so happily conspicuous.

The Transitional style in England must cede to that of the Continent as to priority; yet, like its predecessor, the Anglo-Norman, and its successor, the Early English, it arrived at a higher state of refinement and completeness of character than its contemporary style in either Germany or France. It was free from the quaintness, bordering on the coarse or grotesque, which the one indulged in, and the want of consistency which the other showed, from the retention of many scarcely-disguised Classic features, together with the introduction of others of prematurely developed Gothic. The English Transitional is more self-contained and harmonious than either. It is no longer stern and forbidding, as was the Early Norman. It is no longer ponderous and plain; on the other hand, it is not so light or graceful as to verge upon flimsiness, as was certainly often the case with the lovely Early English. It unites happily the best qualities of our art; and though it would have been undesirable, as well as impossible, to have arrested the tide of architectural progress at that stage, we may and should look back to it with keen admiration, and give to it our earnest study.

In sketching its principal technical characteristics, I shall do so upon the lines laid down by Mr. Sharpe in his "Seven Periods of Church Architecture."

Exterior Compartment.

The round arch still prevails in the windows and doors, as in Norman, but the windows are higher and their shafts slenderer. The buttresses and base course project more, and in late examples have sets-off and pyramidal cappings, and the walls are thinner, and the masonry finer. Moulded cornices are carried on corbels of uniform profile, and the parapets have sloped copings. Generally increased lightness pervades all parts of the building.

Interior Compartment.

The heavy cylindrical columns to piers of a lighter mass of semicircular shafts and square edges, or slenderer circular and octagonal and clustered piers, alternate, and sometimes a shaft with pear-shaped section is substituted.

The capitals still have square blocks moulded down to the circular form below, the lower part being hollowed to the circle, instead of being full and round, as in Norman. Frequently they have small volutes, forming the curled end of a plain leaf encircling the bell. The abacus is square, and its upper edge square in section till late in the style, when greater freedom obtained. The cushion capital is subdivided with intervening leaves, and the small cushions become more and more detached, and at last by successive stages of enrichment become balls of stiff conventional foliage peculiar to English work, and leading by easy gradation to the beautiful Early English foliage. About A.D. 1175 the importation of French influence, through the employment of William of Sens at Canterbury, led to considerable modifications, and the capitals begin to Corinthianise as in France, and the French projecting horn (crochet) takes the place of, or is set beside, the other types described.

The pointed arch makes its first appearance in the earlier buildings in arches of construction, only as pier arches, or those of the crossing; the circular form being retained for arches of decoration, but later it is used for them also, particularly for clearstory windows, which naturally were the last built.

The pier arches are therefore generally pointed, at first obtusely, and lately acutely; the mouldings are few and plain but lighter, usually a roll or pear-shaped at the angle of each shoulder of the arch, and still maintaining the general square section of the soffit, whereas in Gothic it became angular. There is often no hood-moulding. The usual ornaments of the previous Norman disappear, except the chevron occasionally; and in later examples the dog-tooth appears. The vaulting shaft has usually the pear-shaped section, giving it great refinement.

Plain pointed quadripartite vaulting sometimes covers the side-aisles, and occasionally the central one, even with circular-headed windows beneath the acutely pointed wall-ribs.

To enumerate the chief even among the noble buildings of the Transitional period would be tedious. The most characteristic of the works of the period were the abbeys built by the Cistercian order of monks, to whom was due the religious revival of which I have spoken. The whole of their foundations were laid out upon one general plan at this period. They were all dedicated to the Virgin, and built in the most secluded sites that cou'd be found, in the form of the Latin cross,—in England with short choirs generally of but two compartments; the east ends were square, in contrast to the Continental apse fashion; the transepts were aisleless, but had two or three eastern chapels to each; there were no lofty towers till a later date, but simply a low lantern over the crossing with a pyramidal roof. No figure-carving was permitted in them, and there was a general restraint in matters of ornament. The architecture was sternly simple and practical, yet excellent and even elegant; but always dignified in proportion, and neither rude and clumsy, nor frivolous and flimsy. Its remains are truly well worthy of study, and as such I heartily recommend it to this society. It is unfortunate that but few examples have been left in London. But the Temple Church, one of the few examples remaining of another characteristic class of its buildings, the round churches, contains, in its western circular portion, one of the gems of the "Transitional" architecture of England. It is, indeed, fitted by its aspiring and *spiritual* character to elevate the mind. It thus justifies the claim I have made for the award of a higher place than even the intellectual and material glories of the Parthenon secured for Classic, to that style which embodies the principles of Christian architecture.

THE SALON OF 1879.

THE Parisians this year, and the strangers who visit Paris, will have, the former an opportunity of claiming the glory of presenting to the world, and the latter of having seen, the most complete thing of the kind that has yet been witnessed,—the largest collection of bad pictures that the ill-directed industry and greed of artists have ever brought together.

So much art of one kind or another is displayed in Paris that one is disposed to believe that there may be some occult design in the vast display of rubbish this year at the *Salon*, which, as in former years, is presented to the public in the most alluring manner, with the fine old sixteenth-century tapestries adorning the vestibules and staircases, and the display in the rooms of magnificently-arranged *plantes à l'aquarelle*, which, by the way, are not nearly as good this year as usual.

In addition to the twenty-six enormous rooms in the Palais de l'Industrie, which were opened on Monday last, and that we have been in former years in the habit of wandering through, four large rooms have this year been annexed, and the whole display of works of art catalogued this year numbers 5,895,—an increase in pictures alone over last year of very nearly a thousand.

In former exhibitions of the *Salon*, one had to brush up one's historical and anecdotal recollections to properly understand the subject of many well-painted pictures, and we have often had reason to be grateful to the memory, or the more recent reading of our friends, to aid us to understand the pictorial passages from the history of France, or for the poetry of the past. But this year our acquirements in this way are not severely taxed; for neither the historical nor the anecdotal painters have taken much pains either to instruct or to amuse.

Gaston Melingue's "Edward Jenner performing his First Experiment in Vaccination,"—an admirably-painted picture,—may almost be pointed to as the picture that is to gain the honour of the *Prix du Salon*; but the judges will find it difficult to select more than two or three other pictures that are likely to be sufficiently popular to gain the public approbation. In fact, the larger pictures of great pretension are rarely in any way meritorious this year, and there are, indeed, even very few small pictures that have anything like uncommon interest.

Without doubt, M. Henri Lehmann's "Lady in Blue" will become one of the best remembered pictures in this year's *Salon*; indeed, the smiling thoroughbred gentlewoman in blue, as she appears from a little distance, whence she should be seen, is perfectly charming, and is as unlike anything French as any picture we have seen for a long time, and yet, of course, it will be said that the picture was suggested by Goupil's "Lady in Brown," but the "Lady in Blue" will become a formidable rival for popular favour, and will long smile at us from the canvas, and from "photogravures," in well-bred triumph. Years have passed away since Sir Charles Eastlake, from the president's chair at the Royal Academy, thanked Mr. Henri Lehmann for the honour he had done them by exhibiting on the walls of the Academy one of his earlier fine portraits, and still Lehmann is painting in Paris with unabated skill, as his brother Rudolph is doing in London.

Bonnat's portrait of Victor Hugo is certainly inferior to his portrait, exhibited two years since, of M. Thiers, at which time, it is said, Bonnat had arrived at the highest point of that peculiarly strong mode of painting which has, after

all, something in it approaching vulgarity. We rather fancy that the portrait of Victor Hugo in chalk, to be seen in another room, possesses much more of the character, and profoundly thoughtful expression of the romantic author of "Hernani" and the "Hunchback of Notre Dame," of the uncompromising republican, and of the benevolent theorist.

It is interesting in this year's *Salon* to see a work by the painter of "Rome in its Decadence," Couture, who died only the other day; but the work is painfully commonplace and coarse, although still showing the peculiar manner of painting that led in its day to such splendid results.

Cabanel's two portraits also have but the merit of business-like carefulness, and even Henner's two pictures draw too largely on our respectful feeling for the painter and his aims, and not enough on our admiration for the pictures themselves. Duprez's "Capitaliste" is amusing, and exactly suited for photogravures; and as for Delance's "Three Ages of Life," we cannot say which of the three periods, as he represents them, is the most uninteresting.

Benjamin Constant's "Night on the Terrace" is really as vulgar and absurd as it is possible to imagine; and Bouguereau's "Birth of Venus" is surprisingly deficient in intellectual treatment, and not, as one might have expected, too cleanly in its painting for Bouguereau or for the subject.

It cannot be said that Bastien Lepage has made any advance; and although he is now considered the rising hope among French painters, his pictures this year are certainly not equal to the fine portrait exhibited by him in the *Salon* of 1877, and afterwards at the Royal Academy last year. Of his portrait of Sarah Bernhardt, the care at least with which it is painted is highly meritorious; but the portrait, like all those,—like the many,—that are now appearing of that eminent actress, is pretentious and vulgar, owing to the evident attempt at strange and unusual peculiarity. But artists, they say, are not to be judged by the standard of other people, and Sarah Bernhardt, at all events in Paris, is allowed to do exactly as she pleases.

Of Gustave Doré's enormous picture of the "Death of Orpheus," all that can be said of it is, that it is another picture by Doré, rather worse than usual and exceedingly green in colour.

Lefebre's picture, "Diana Surprised," on which the painter, we hear, has been very long engaged, will gain for him but small additional fame; and as for Herkomer's picture, "Eventide," exhibited last year at the Royal Academy, it is surprising how little it "tells" in the *Salon*, notwithstanding that it is surrounded with so many worthless paintings; but its ugly old women are English, and ill understood in Paris, and the picture altogether does not seem to attract much attention from the Parisian artists.

Detaille this year is not in great force, and we miss altogether the works of Meissonier, Gérôme, Alfred de Neuville, Chaplin (although we find a charming picture by his pupil Mrs. Louise Jopling), Clairin, Toulmanche, Stevens, Baudry, Gustave Boulanger, Pasini, Robert Fleury, and many others, all of whom seem to have shrunk from the anticipation of uncongenial contact. Literally, it can be said, there is not one fine landscape in the Exhibition, only two or three sea and sky pieces, such as we have seen for some time, and with which Artois long ago made us familiar.

There are fewer nude pictures than usual, and still fewer tolerable attempts, and pictures exhibiting carefully selected and harmonising colours of draperies than we have long been in the habit of seeing in Parisian galleries, and a general look about the portraits as if the painters had been unable to secure sitters among great or famous folks, and had to content themselves with second-rate dressmakers and substantial grocers.

Mr. Sargent, the American painter, in his portrait of his friend Carolus Duran, bids fair to secure a renown in his own country, that will add a fresh glory to that growing republic. Charles C. Bernier's large wood scene is, after all, but a feeble Diaz on an enlarged scale, and Breton's head of a peasant girl is ugly, but truthful. Clay's pictures, as usual, are substantially painted, but as works of art too much resemble each other, and are not sufficiently like nature, as common people see nature, to please us all.

Signor Cotti's "Dante at Verona" is but little like Dante, and still less like Verona; and Karl Daubigny's landscapes are much too slight even for the present day, when painters appear to be trying to see with how little work they can manage to get up an effect, caring little or nothing whether that effect be good, so that the canvas be covered. As for the portrait by Gonzalez of the lady and gentleman in a box at the Italian Opera, the picture looks as much a ruin as we had the grief the other day to see the old Italian Opera-house, which is now being pulled down. As for the other followers of the great master Fortuny, they appear to have gone wild in their mad search for frippery and insignificant effects of contrasting and harmonising tints. Fortunately, however, the Spanish school does not appear to spread beyond the few who have so successfully followed in the immediate footsteps of Fortuny, and whatever the faults of the school may be, they do not consist in any attempt to shirk work or inquiry.

In this year's *Salon*, for the first time, we think, the work of the men who are called, or call themselves, "Impressionists" exhibits conspicuously stupidity and carelessness, and one wonders why a committee formed of painters, sculptors, and literary men such as constitute this year's selecting jury, could have been so madly liberal as to accept the pictures they have admitted for exhibition.

Paris.

A MUSEUM IN RUINS.

THE stranger who arrives at Verona cannot fail, before he has passed any great length of time in the city, to find himself in presence of the old Roman Amphitheatre, or, as it is now usually called, the "Arena," which, not unjustly, has long formed one of the chief points of interest of Northern Italy. Many a happy and profitable half-hour may be spent in wandering round the grandiose old ruin still standing so stoutly, in spite of its having been stripped and pillaged for centuries; or, as almost equally interesting, in the network of streets in the vicinity of the old pile, where at every step the most indifferent observer can detect relics and fragments unmistakably of a period when the Romans were masters of Europe.

It is almost impossible for the stranger to be any time in the broad open piazza, over which stands sentinel the old Roman Amphitheatre, and with it its hideous brother building of the Municipio, which does its best to injure the effect of its senior by so many centuries, without having his attention attracted by the gateway, with its quaint fish-tail castellations, disfigured by an only too legible china clock-face, and near it, on one side, the Gran Guardia, on the other, gauntly staring through the rusty railings of its courtyard-gateway, the so-called Teatro Filarmonico.

Much as the desire may have taken hold of us to penetrate to the narrow streets of the town, with their stately palaces and rich Renaissance doorways and innumerable balconies, so familiar to the professional student, there is a mystery and a romance hanging over this old theatre that seem strangely in character with the home of the legends from which Shakspeare drew more than one of his world-famed compositions. In the weed-choked courtyard there seems to lurk that spirit of neglect that speaks so plainly a tale of want of interest, while the moss-grown fragments of bas-reliefs and inscriptions, scattered here and there, arouse attention, even in a city where at every turn a quick eye is able to detect, imbedded in the walls of the houses, some fragment of the work of ancient times.

Under the tall, pseudo-classic columns of the inner entrance lie other remains, seemingly untouched. There is not the appearance in this old-world corner, so near the bustle of the *piazza*, of its being opened even one day in the week "for a consideration" to the apparently absent custodian. There is no eager rush at one by that usually officious official as one is seen, *a forestiero*, to peer inquisitively through the rusty railings, or when one inquiringly passes along the inclosing wall, and past the neglected but stately entrance to the theatre, and so to the back of the old place with its quiet garden, through which flows the Adigetto at the foot of an ancient tower, whose age it is almost impossible at a glance to determine, but which bears the local name of the Wall of Theodoric. The appearance of neglect is only too truly in accordance with facts, and within a few days past, after having lain thus in disorder for years, the whole history of the old museum has been brought before the public of Verona and the consideration of its communal counsellors.

And an interesting history it possesses, confused as it is with that of the Teatro Filarmonico, itself no stripling, for the museum appears to be one of the oldest of all such collections in Europe. The connexion of the eminent antiquary, Scipio Maffei, with its subsequent formation, after a century of existence previously to his time, takes us back to the first years of the eighteenth century. The land on which the Museo Lapidario is built was, in 1561, given by the Venetian Republic in fief for 25 ducats annual rent, to the family Della Torre, and, some thirty years later, was sold to the city of Verona for 2,300 ducats. In 1604, the property was handed over to the Philharmonic Academy, and on this society being absolved at a later date from its yearly rental, the Academy, as a proof of their gratitude, presented to the municipality a white wax candle, ornamented with its own escutcheon and the arms of the city; at the same time the society commenced to build on the space of ground given to them their still existing home, with a large hall, and the Ionic vestibule, the design of Curtoni, or, some say, Fontana, both pupils of the school of the Veronese architect, Sanmichele.

The real origin of the Museo Lapidario may be said to be the collection of antique inscriptions and torsi of statues which the Canon Nichesola had made at his villa at Pontone, and by him presented, in 1600, to the Philharmonic Academy. This collection, we learn from an existing manuscript, was transported from the Canon's villa to the courtyard of the Academy; in number the inscriptions and fragments were some sixty.

Thus we see that the museum, as a museum, has existed ever since 1600, an antiquity that few, if any, of the great European collections can boast. But in those days, as now, the museum was allowed to fall into neglect, and the moss, as Venturi tells us, had already commenced to creep over the old grey stones, then, as now, lying in the courtyard. Fortunately the Philharmonic Academy possessed among its members, Scipio Maffei, one of the most learned initiators of that "science" of archæological investigation which has now arrived at such a position, and to which we owe such a debt of gratitude for having cleared away the darkness that surrounded the history of the past. In 1714 Scipio Maffei determined to take in hand and arrange the museum. In a letter which exists in the library of the Silvestri family of Rovigo, he speaks at length of the care and expense which this collection of Greek and Roman inscriptions had entailed upon him.

"The Philharmonic Academy," he writes in this letter to Camillo Silvestri, "which occupies a sumptuous home built specially for its own use, possesses, and has possessed for many years, a collection of some sixty or so inscriptions, among these not a few rare and valuable pieces, together with some bas-reliefs of great beauty. I have, after much difficulty, persuaded my fellow academicians to drag from their moss and neglect these relics, and place them under shelter. I shall eventually arrange them in methodical order; but before commencing, I should like to increase the collection as far as is possible. I have already given all my own inscriptions, the Conte Bevilacqua has done the same, and many other noblemen. . . . . What we should value most would be Greek inscriptions. The reason why I prefer these arises from the fact that I have no knowledge of any museums possessing more than seven Greek inscriptions. We already possess ten, four we shortly expect to arrive, and three others we confidently reckon on. . . . I am certain that you will not refuse to aid us in such a cause, and awaiting a reply, I am, devotedly, your obedient humble servant,

SCIPIONE MAFFEI.

Verona, 2nd December, 1716."

We can judge what praise Maffei deserves when we learn that the collection and arrangement of the museum occupied this distinguished antiquary from the year of the above-mentioned letter till 1744, at which time was razed the wall of the courtyard and rebuilt, with a portico divided by Doric columns,—a melancholy specimen of the art of that day. Above the architrave of these columns may still be seen the coat of arms of the learned and devoted Maffei, and here were gathered and protected from the weather the more interesting marbles and inscriptions.

The work terminated in the middle of the last century, a few years before the death of Maffei, who died in 1755. The academicians had wished to name the museum after its indefatigable curator and founder, the Museo Maffejano, and had even ordered the erection of a marble bust, together with a laudatory inscription. But both honours Maffei refused, content that the country should enjoy the museum he had laboured so many years to form as a "public museum," and in order to make the collection and its treasures better known to the world, he published, in 1749, his famous "Museum Veronense."

After the publication of this work, other marbles were added to the museum, and were placed where room was found for them, and hence the original classification was disturbed. Of these more recent additions, many were left neglected in the courtyard. During the French occupation at the end of the last century, several of the most valuable relics were transported to Paris by order of Napoleon, among them the testament of a certain Dame Epitetta, which was, however, returned at the Restoration.

In 1811 the Philharmonic Academy was reconstituted and formed into the existing Philharmonic Society, the museum still being under the control of the society. A complete catalogue of all the objects in the museum is wanting; as also, indeed, any clue by which a student or stranger may visit and verify any of the undoubted treasures which the museum contains.

The "Museum Veronense" of Maffei embraces also the Museums of Turin and Vienna, and many other collections, while a corresponding series of numbers on the walls is wanting; those, therefore, even who possess this valuable and rare work would meet with much difficulty in finding any desired inscription. The Marchese Jacopo Muselli, to obviate this inconvenience, had prepared for press a work containing alone a list of the contents of the Verona Museum, and Leonardo Targa had prepared another work of the same nature. In 1795, the Abate Tommaselli translated these two manuscripts, and presented them to the public in a volume entitled "Museo Veronese Ridotto a Maggior Chiarezza," but this work is now rendered useless, the situation of many of the inscriptions having been changed.

It would be eminently a desirable task for the municipality to prepare, with the aid of a special commission, a careful catalogue of the museum, and thus enable the many students who are interested in such studies to examine the various inscriptions at ease, and also to make known to those even who may be unable to visit Verona, the many interesting treasures which the museum possesses.

There is now every prospect that an intelligent management of the collection will succeed the neglect of years. In the discussion which has occupied the municipality of Verona for the last few days, an excellent proposal has been put forward to absolve the management of the Philharmonic Society from the very incongruous duty it has held, of the care of the Lapidarian Museum, the care of which will henceforward be one of the duties of the municipality.

As soon as this proposal meets with the necessary approval, a great change, it is certain, will take place in the aspect of the old museum and its moss-grown courtyard. The strangers who visit Verona, if not this autumn, at least next spring, will be able to admire one of the till this time most unjustly neglected glories of Verona, and the restless spirit of old Scipio Maffei will settle down at length to comfortable repose in his tomb at Sta. Maria della Scala.

Verona.

OBITUARY.

Mr. W. H. Woodman, Architect.—The death of this gentleman, late of Reading, took place at Matlock on the 30th of April, at the age of fifty-seven. Mr. Woodman was at one time borough surveyor of Reading, and surveyor to the Reading Local Board of Health; and as a practising architect, in connexion chiefly with Mr. Poulton, designed and executed a number of buildings. Illustrations of several will be found in our volumes, including the French Congregational Church, Halkett-place, St. Helier;* Independent Chapel, Bridport, Dorsetshire;† and Basingstoke Cemetery, Hampshire,—chapel and lodge.‡

* Vol. for 1855, p. 554. † Vol. for 1859, p. 360.
‡ Vol. for 1859, p. 761.

THE CITY CHURCHES AND A PLEA FOR THEIR PRESERVATION.

THE threatened, nay, the somewhat more than threatened, wholesale destruction of some thirty of the City churches would seem to be a matter of so much import, and indicative of so much in the future, not only as to architecture, but of many other things,—hardly so much thought about as might be expected, considering their import,—that we feel quite assured a few added thoughts about the City churches, many of them well known to us in detail, can hardly at the present moment come amiss; for the more the matter is cogitated, the more momentous and urgent does it seen, as regards architecture, and especially London architecture. There can hardly be seen, mentally, a more striking contrast than that presented by the aspect of Old London immediately before the Great Fire, and the London of to-day, as pictured in a modern map. It is very difficult to compare things so totally different,—so small in dimensions the one, and so apparently boundless the other! It would be right curious, indeed, to speculate on what the architect of new London, after the Fire, would say could he but be present at a modern lecture-table, some eventful evening, and there recount his day's experiences in studying maps of London, and in looking at the huge City, say from the top of his Monument, whence so striking a view can be got.

It is very difficult indeed to define accurately what is meant by the term "architecture,"—where it begins, and where the plain building ends; for the very roughest and most clumsy of structures may and do rise into "architecture." An Old London street before the Fire, and before Wren went to work in it, was most surely an architectural creation, and certainly picturesque beyond anything we now possess in the most improved of our modern highways, however costly and "architectural," as that term is understood. And yet what was it? It may still be realised in idea by the mentally putting together what few remains we yet have of single houses scattered about here and there in narrow byways and in out-of-the-way and tumble-down streets and courts. A London street before the Great Fire was a work full of architecture, certainly; and Wren, when he went to work to rebuild it, did but follow in the old lines, as these very City churches of his sufficiently prove. No one can pass through any one of the narrow ways in which these churches for the most part still are without seeing this, and without acknowledging the influence, spite of all disfigurements, the old ideas of town and city planning and building, had over and in him. Thus, in the caring for and in the preservation of these City churches only as buildings, we are, first of all, but preserving memorials of our capital City's antiquity,—surely a something worth the doing.

But, after all, there is another and a greater difficulty than any connected with architecture, or antiquity, or the picturesque, in the matter of these City churches. It is what to do with them, the purpose for which they were expressly built and designed being provided for elsewhere. In these days, enlightened as they no doubt are, all things are more or less simply "utilitarian." There is but narrow room, indeed, for mere fancies and sentiment. If a thing be of no practical use or purpose, it is quickly put aside and forgotten, and a something else is found to fill its place of immediate and practical usefulness. All these quaint and curiously designed churches will, without doubt, if pulled down, make room for shops, or warehouses, or dwelling-houses, no such valuable ground as that on which they now stand being long left unoccupied. Well, be it so. But is there nothing, it may be asked, in these days of trade and business, to be allowed to mere human feeling and sentiment, and love of the old for its own sake, and for the sake of historic memories and the calling up to remembrance the images of things as they were? Surely an object here and there, though converted to no practical purpose, might well exist, if but only for those who look a little deeper than for the merely utilitarian. Nay, may we not add to our plea by affirming that all more or less do this, though they may not, indeed, know it, or be conscious of it?

It would be hard, indeed, to select, out of the many narrow ways in which these condemned City churches are situated, any one specially typical. We might, indeed, take the very first on the list given on page 489,—St. Mary's-at-Hill, near Thames-street. And here, in passing, we may note that there are no more "picturesque" London ways than those immediately following the line of the bending and winding river, and of those byways immediately leading from some main thoroughfare down to it. Wren would seem to have seen this; and most certain it is that this very Thames-street, so picturesque in detail of house-building in his day, must needs have impressed him, together with the other narrow ways in which so very much of his work lay, and thus have influenced in no small degree his designing powers, and almost compelled him to make of these very churches what they now are,—structures in one special style of art powerfully influenced by another and a different one. We will venture to affirm that there is no more curious and instructive fact in architectural practice and history than this one of the influence of the great Gothic art and feeling of the Middle Ages on the mind of a very able and clever man educated and brought up under the all-powerful and all-potent influences of another and a totally different phase of art.

And hence, even if there were no other reason, we should deplore the destruction of those City churches, they giving, as they do, so special a character to the City proper of London, and distinguishing it from that of the enormous mass of buildings, and lines upon lines of streets and ways which surround it. It is the architectural centre of the whole mass of buildings, and makes London, indeed, the city which it specially is. Since Wren's time, it must be borne in mind that though London has increased so enormously, there has indeed been but very little, if anything, added to it in idea but the great railway stations,—those huge and open doorways into the country,—which surround it. What Wren would have done with a great railway station it might be hard to determine; but that it would have been somewhat more imposing and suggestive than anything we yet have about us in London, we may, we think, be quite sure of. But this in passing, and for the purpose simply of evidencing that we have nothing, indeed, to throw away in the architectural range of things, no architecture that we can afford to dispense with in mighty London. Indeed, may we not go much further even than this, and affirm that the worthy citizens of London City have good and ample reason to be proud of what Sir Christopher Wren did for them, and that those outside the City walls and boundaries have as yet but little to compare with it?

We might, indeed, well and usefully go through the whole list of the churches, each one of them remarkable for a something or a somewhat, but must forbear. We would but specially take note of St. Mary's, Abchurch, 1686, for the sake of the wonderful carving in it, and for the specimens of artist-workmanship it contains by Grinling Gibbons,—remarkable work truly, and but rarely if ever excelled. In his own special line of work, Gibbons was a master. If for no other reason, this special church should be religiously preserved, and, we would suggest, left open, under due regulations, for the purposes of study. The artist-workman, we will venture to affirm, can hardly anywhere find carving better worthy of study, and even of copying. In our great museums there is none better, or more useful, or more inspiring; and the day will most surely come, though not perhaps very quickly, when such work as may here be seen will come within the range of even Royal Academy notice. Thus this special church, if no other, should be preserved for the sake of the workmanship found in it, if for no other purpose. Here, then, is one good reason for preserving a City church,—as a school of art for working artists and "carvers" in wood and stone; and for the purpose of evidencing the fact of the existence of high artistic and inventive power, applied to a good purpose, in our own country, and without being borrowed!

It is impossible thus to point to the fine carving by Gibbons, and to its careful study by students and workmen, as a motive for the preservation of even one of these City churches, without note of the interest which attaches to them generally as simple objects of study and as schools of art and architecture. Surely we may usefully bear in mind that in other and distant countries there are not a few buildings of which so much has been through all time heard, which have been suffered to remain as pure memories and memorials of past and forgotten times, or all but forgotten times. We need not here specify them in detail,—the

Athenian Parthenon and the Roman Coliseum will of themselves suffice. Both are ruins, if there be any such anywhere, and both useless, in all practical senses of that word. But who will venture to say they have done or even now do nothing? How much has the world got through the careful study and measurement of them even to the minutest detail! How much do they prove and teach, and how much should we miss them, useless as they are and purposeless! More, very much more, we need hardly say, might here be said, and not a few proofs offered to show how much the world of humanity has gained by the preservation and study of what past time has left it,—purposeless and useless though it now, in this actual present, may seem to be.

THE ARTISAN OF JAPAN AND HIS WORK.

IN Japan, the skilled workman is socially the superior of the trader, and the carpenter is foremost and the most important; in fact, he is called *Dai-ku* [great workman], and is architect, builder, and joiner; although for the minor branches there are special terms used, and the subdivision of labour is carried out to a greater extent than in other trades.

When it is proposed to erect a building, or rather the series or group of buildings that constitute a residence or a place of business, the master carpenter is called in, a plan is discussed, and the outline fixed upon; in the course of a few days, perhaps, the estimates are prepared, at so much per *tsubo* (of 36 superficial feet), measuring from the centre of the corner uprights; a plan is drawn to a large scale on a board, ground-plans, elevations, &c., the *ken* (of 6 ft.) being the unit of measurement. The ground is then marked out, carefully measured, and levelled with a water level,—this is a piece of 4-in. or 6-in. square stuff, which is planed level and square, with a groove in the upper side, with also a small hollow in the centre, and one near each end. Tthe water is poured into the centre, and the "level" propped up until the hollows at both ends are quite full of water, and consequently level. Of course, when the surroundings do not arbitrarily debar a choice of frontage, a southern aspect would be preferred, the north-east being most objectionable. Certain rooms would be placed in "lucky" parts, and the astrologer and soothsayer must be consulted. The position of the kitchen, the altar for the household gods, and other details, having already been decided in accordance with well-known fixed rules of procedure, a lucky day must be chosen upon which to break ground and commence the foundation. Unless a large building or a fireproof storehouse is to be erected, the foundation will give but little trouble; however, the "ground-worker" must be next called in; this is the class similar to our "navvy," and from which the "fire-brigade" is chosen. Should a very solid foundation be required, piles driven, &c., a scaffolding is erected, and a large rammer, made of hard wood, is used, varying in size according to the circumstances, with a heavy iron band on the lower end, and just above which a number of ropes are attached, one for each man. There are two slight poles attached, parallel to the axis of the rammer, used by one of the men above to guide, while the others, who are mounted on the scaffold, lift it by the ropes and let it drop; the foreman remains below to guide the head as it drops, with the aid of a short piece of rope. While working at this the men chant a chorus of the most peculiarly hideous and noisy character, an old custom, which, they say, drives away the evil demons: certainly it is frightful enough in its way; it affords opportunity for jests and by no means choice language, for these "workers of the soil" are a very rough lot. The foundation is usually formed by scraping out a few inches of earth and ramming down some rubble, upon which is laid a course of rough-hewn stone, the ordinary size being about 10 in. to 11 in. square, and in 2 ft. to 3 ft. lengths, basalt, granite, or sandstone, as may be necessary or advisable; the latter is the cheapest, of course. Upon this is usually, in the better class of construction, a course of clean-dressed stone of better quality, upon which will rest the frame of the building, uprights to support the floor, or, in the case of large heavy roofs, centre posts are rested upon large blocks of stone with a tep cut in them to prevent slipping when the house is shaken by an earthquake.

There is little opportunity for the stonemason, or the quarryman that supplies him with materials, to exhibit his skill here, but of these more hereafter. They have no idea, however, of the "natural bed" of stone, facing it on the side most easily worked.

While this has been doing, the "contractor" has been to the timber merchant to arrange for delivery of timber as required. The bulk of the stock is stored in shallow ponds, stacked up so as to keep it completely submerged, and the Japanese tradesman prefers the wet timber to work upon. Timber is rough-hewn into lengths that will give clean timber of 6, 9, 12, 15, and 18 ft. lengths, and for square stuff a mortice also; the large timber is then taken to the "works," and there cut up into the sizes required.* These "sawyers" form a special branch of trade.

To prevent the timber splitting and warping, the Japanese take a half-cut to the centre and parallel to the heart, and fill it up with a slip, as the wood dries and the cut "gapes" or expands.

The carpenters take their measures from the "working plan" already mentioned, and the roof, composed of rough crooked timbers, is placed together by most builders as they are cut, although there are some who scorn to do so, depending entirely on the accuracy of their plan and measurements; every joint and every piece is marked ready to put together. When the frame is completed, a lucky day is selected to erect it, and this is very speedily done, for the carpenters and friends are eager to set to work at devouring the good things provided upon all such occasions.

The details of the processions, the various superstitions, &c., interesting though they undoubtedly are, cannot be introduced here, as they would occupy too much space.

Most of the partitions and walls of a Japanese house are formed of sliding panels, either covered with semi-transparent paper, or else thickly and strongly papered on both sides for inner partitions; some portions of the inner partitions and outer walls being of plaster, a framework of small-sized and split bamboo is used, upon which mud and stiff clay are plastered, coat upon coat, at least three coatings, and then finished as necessary.

The plasterer is the "right hand" of the carpenter, and ranks next him; he is usually more of an artist, the better tradesmen being highly skilled in ornamental and fancy plaster work. Lime made of burnt shells is much used, and it is mixed with size extracted from sea-weed by boiling; outer walls are generally protected by thin weather-boarding, which is coloured with lamp-black and the same kind of size as that already mentioned. Broken shells, pure gravel, and coarse brilliant sand are often used for portions of interior walls plastered, and give a very pleasing appearance to the room, as a contrast to the neat matting and daintily-papered screens and panels. The roofs of dwelling-houses of the better class are tiled; they are first boarded with ¾ in. pine, then thin split shingles; sometimes the bark of the *cryptomeria* or *retinispora* is laid on this, but invariably a large quantity of clay or river-mud is used to "bed" the tiles in.

Fireproofs are so successful in resisting the fierce heat, if of short duration, that they withstand the sweeping conflagrations that occur in the Japanese cities. A wooden frame with a lacework of bamboo forms the foundation for a solid mud structure that becomes as solid as a firebrick, and stands firm long after the wooden frame has decayed.

The Japanese will remove a house, even one of their large heavy fireproofs, for a long distance. Securing crosspieces to the main uprights, they raise it off the foundations with a number of long balks for levers, to the ends of which heavy stones are attached. The foundations removed, timber is substituted, and small rollers (about 2 in. diameter) are used, planks of hard wood being laid down, between which the rollers work.

Brick and tile makers will be mentioned fully hereafter. We must now return to the finished house, and see about fittings and furniture.

The mat-makers keep a stock of mats ready to be covered. These are made of rice-straw which has been beaten flat and woven and sewn together until it is about 1 in. thick, 3 ft. wide, and 6 ft. long. This core is covered with fine matting, turned round the ends, and the sides are bound with a coarse linen border 1 in. wide, black, or white with spots for some special purposes. Considerable experience and judgment are required in fitting the mats and laying them down, so as to wear well. The traffic should be with the grain, and nothing appears so unsightly as a badly-matted room.

The sliding panels that form a partition are either in pairs of 3 ft. each, or in fours, filling a space of either 9 ft. or 12 ft. These are papered on both sides, with a wooden border. The method of securing this border, without nails appearing, is curious, and, as the border is generally neatly lacquered, a matter of some consequence.

The windows are sliding panels, outside of which rain-shutters are fitted, to be closed in stormy weather, and nightly.

The aforesaid panels are supplied by a branch of the carpenters, and are kept in stock ready made and well seasoned, of all qualities. The cheaper are made of *Cryptomeria*; indeed, this wood forms the principal building material. The better class of fittings, and some portions of the more expensive houses, are made of *Retinispora obtusa*. Fancy woods are used to a small extent only.

In the reception and living rooms there is invariably a recess, raised some 3 in., with a border of lacquered or fancy wood, in which are hung pictures, and where flower-vases and swords are mostly seen; in fact, it seems this recess has been the especial place for the sword and art objects. Some rooms have little cupboards, sets of shelves, &c., fitted, so that there is plenty of opportunity for the *dai-ku* to display his good taste and ability as a designer.

The Japanese workmen and artists do not proceed at random; there is a systematic training based on ancient custom and precedent; handbooks, with elaborate instructions, and progressive lessons, are cheap and accessible to the poorest, for circulating libraries abound. From first strokes to the finished drawing, and for each class or style of design, there are many elaborately illustrated works that can be referred to.

The blacksmith does not contribute largely to the ordinary dwellings, but the metal-worker in small articles is an important person: there is a great amount of small ware needed in the way of hinges, hasps, plates to hide corners, and other joints, where the hand touches the panels in opening and closing, and in trifles about the house.

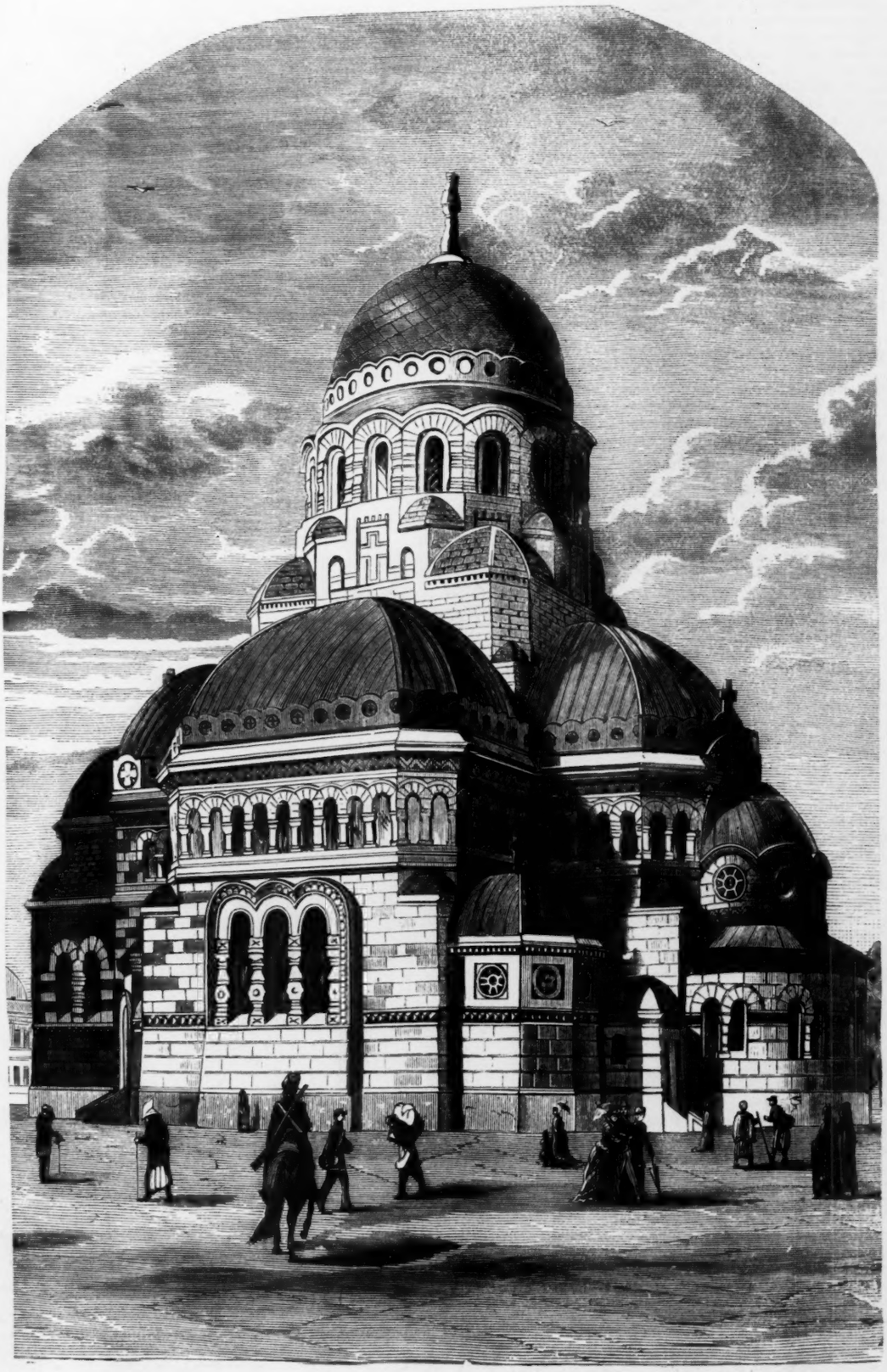
The worker in metal is without exception the most artistic of Japanese tradesmen, and the least dependent upon others' skill: he deserves special notice. Although the blacksmith and the nailmaker are kindred branches, yet the latter is but a secondary personage: iron nails are not extensively used; even cheap, foreign-made nails find but little sale.

The house being furnished and fitted, a general cleaning up precedes the grand ceremony of entering upon occupation thereof. The chests of drawers (made of the timber of the *Paulownia imperialis*),—of the several members of the family, each lady has at least one, her toilette and mirror stands, work-box, &c.,—are moved in, and placed in their appointed places behind sliding-panels in recesses specially constructed. Then come in the large bedding-chest and its contents, the kitchen furniture, and the small stands, bowls, &c., for each member of the family has a set of utensils, the greater portion of all of which are of wood, lacquered.

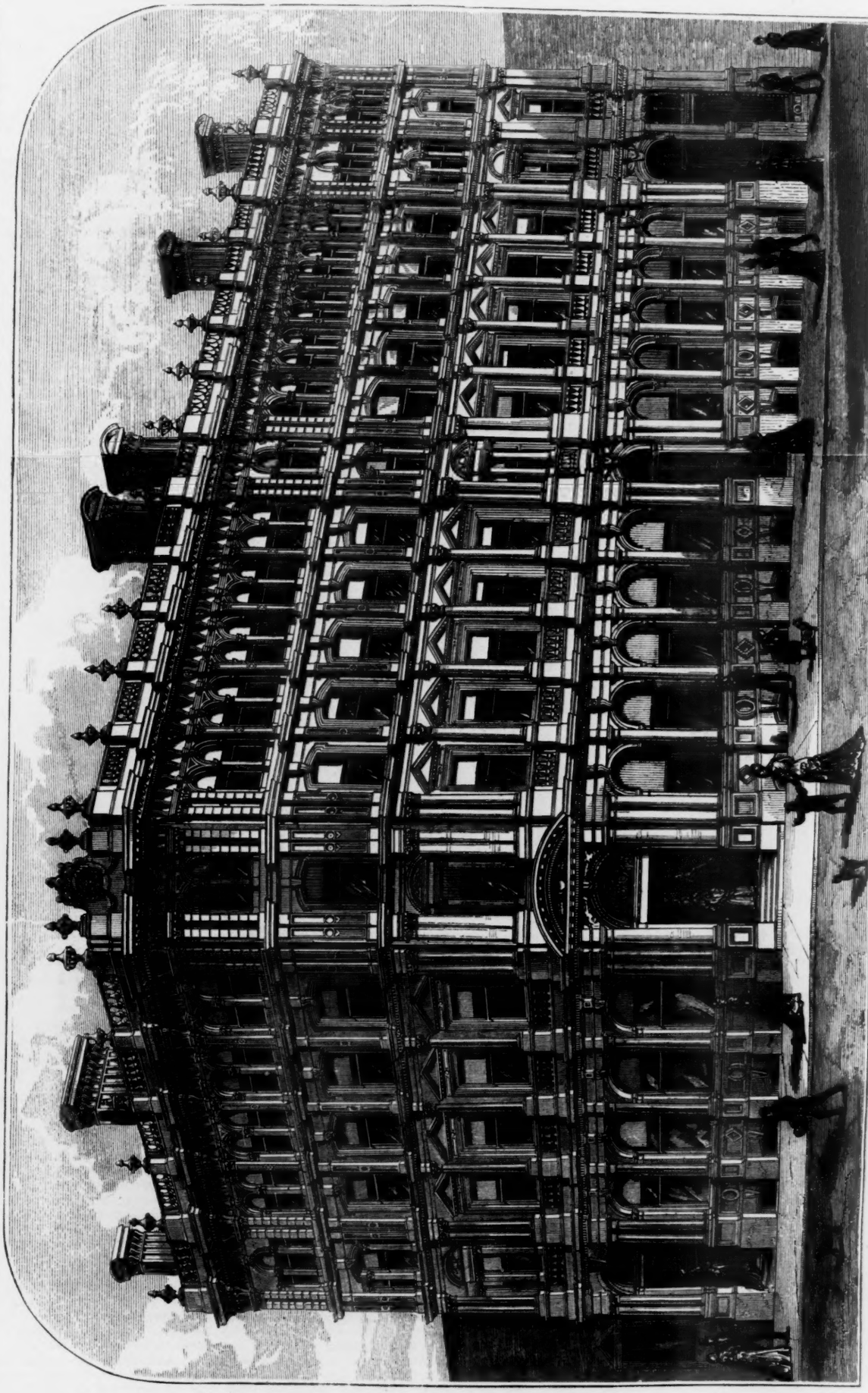
* The tools used are peculiar, and deserve description, but illustrations only can give any idea of them.

A PACIFIC CABLE.

ACCORDING to the German *Postarchiv*, the concession for a cable between San Francisco and Yokohama has been obtained, and the concessionnaire is now taking steps for securing the permission of the Chinese Government for continuing this cable to Tientsin, and constructing thence a telegraph line to Pekin. China would thus at last be placed in direct telegraphic communication with the rest of the world. The junction of the Chinese lines with the great Siberian telegraph line, perhaps at Kiachta, would then be only a question of time. All this progress, and the prospect, in consequence of the events in Zululand, that the electric wire will shortly encompass the Cape of Good Hope from St. Vincent, thence seeking for a connexion with India, justify the hope that several of the larger gaps still existing in the submarine network of telegraphs covering our globe will soon be filled up.



THE NEW CATHEDRAL, ORENBURG, RUSSIA.—DESIGNED BY HERR B. A. SCHRÖTER, ARCHITECT.



THE LONDON AND SOUTH-WESTERN BANK: BRISTOL BRANCH.—Mr. Weir, Architect.

THE NEW CATHEDRAL, ORENBURG.

SOME time ago a committee was appointed for the purpose of collecting subscriptions for the construction of an orthodox cathedral at Orenburg. This committee applied to the St. Petersburg Society of Architects, requesting the latter body to issue a programme of competition, with a view of obtaining designs for the proposed cathedral, and inviting at the same time the members of the society to take part in the competition. It is proposed to erect the cathedral on a square of the town of an average length of 1,120 ft. and a width of 560 ft. The space allotted for the cathedral, together with the enclosure in which it is to stand, is 280 ft. in length and 210 ft. in width. Accommodation is to be provided for 2,000 worshippers, reckoning about 2 feet square for each person of the congregation. In conformity with the details of the programme elaborated by the St. Petersburg Architectural Society, allowance was to be made in the altar-space of the church for the construction of the sacristy and the church library, the entrance to the latter to be a separate one. The altar-step platform in front of the iconostasis was to be no less than 7 ft. in width. The church was also to have a special warm room for the verger, situate near the entrance. The number of cupolas was not determined, and the choice of the style of construction was left entirely to the discretion and taste of competitors, no instructions or conditions whatever on this subject being issued. As it was proposed to do without a separate belfry for the peal of bells, of which the largest must not exceed 11 tons in weight, provision for hanging them was to be made in the side cupolas, and only in a case of emergency was a specially constructed belfry to be adopted. The cathedral is to be built of ordinary burnt brick, and plastered over both inside and out. In the more prominent places in the interior, however, the walls are to be lined with jasper slabs. Jasper being found in great abundance in the Orenburg country, this mode of ornamentation will not increase the cost of the proposed structure to any considerable extent.

Three designs were sent in by the time appointed to the jury appointed by the Society of Architects. They bore the respective mottoes of "Kirghise Steppe," "God helps those who help themselves," and "Go ahead." The first of these designs appeared at first sight to satisfy the requirements of the specification, the altar-spaces being sufficiently roomy; but the form of the side chapels was exceedingly inconvenient and inelegant, and presented difficulties to artistic elaboration such as is required for an orthodox church. The façade of this design was also too cramped and narrow; the side cupolas and their interior forms were inelegant and unsuccessfully treated; and, besides, in the profile of the design the curved side portions seen behind the iconostases of the side-chapels produced a disagreeable impression.

The second design was acknowledged by the jury as satisfactory generally,—the façade as being very good, and its dimensions as fully answering to the conditions of the specification. At the same time, in the opinion of the jury, there was a want of harmony, one of the principal defects in this design being the existence of places whence divine service could neither be heard nor seen. The depth of the altar-spaces (the middle one of 16 ft. 4 in. and the side ones of 11 ft. 8 in.) was declared insufficient, and the altar-step platform in front of the iconostasis was too narrow.

The design selected (of which we give an illustration), with the motto, "Go ahead," fully answers to the conditions laid down by the St. Petersburg Society of Architects, according to which the space for the cathedral with inclosure is fixed at 280 ft. in length by 210 ft. in width. The cathedral itself, together with the steps leading up to it, occupying an area of 190 ft. in length by 116 ft. in width, there remains a space all round of nearly 50 ft. up to the inclosure, which will permit of ornamental grounds being formed round the edifice. According to the design, the available parts contain a superficial measurement of 5,370 square feet; and if we add to this the space occupied by the apses, the total area fully answers to the requirements of the specification as regards the number of worshippers to be accommodated.

This design, on the whole, has been approved of by the jury; but they have pointed out several defects, which will be remedied in the course of erection. For instance, the chief altar is not sufficiently deep for the purpose of celebrating high cathedral service; while the side chapels, although they are of sufficient depth, are not wide enough. The width allowed, 12 ft., is not enough for the accommodation of the iconostasis, and is insufficient for its artistic decoration. The sacristies, of 6 ft. in width, are considered rather narrow, and, having a passage through them, are inconvenient for placing the presses in them. The library (*bibliotheca*), not quite 5 ft. wide, is too narrow, and it should not have been made open on the side of the altar, as the bookcases, which will be placed in it, and which may be rather high, will spoil the view of the altar from the main body of the church. The general perspective of the cathedral is pronounced perfect. A person entering the church will be struck with the display of artistic richness, the elaboration of the profile of the design producing a beautiful effect. The side entrances have been very successfully placed, obviating draughts in the nave of the church. They are convenient both for high cathedral service and service in the side chapels. The façade is considered exceedingly good and artistic, but it would be desirable, in the opinion of the jury, to widen the cupola a little. The belfry, opening only on one side, is not quite practical, the sound by this arrangement not penetrating equally all round the building. But, as has been already remarked, all these defects will be remedied.

The author of the successful design is Herr B. A. Schröter. He takes the first premium, and the second and third prizes naturally fall to the share of the other two competing architects, there being no other competitors.

The whole affair appears to have been very well and creditably managed.

LONDON AND SOUTH-WESTERN BANK: BRISTOL BRANCH.

THE building for the Bristol Branch of the South-Western Bank is being erected on the site of the Church of St. Werburgh, lately pulled down for city improvements, and is situated at the junction of Corn-street and Small-street, Bristol.

The corner is intended for the bank use, and the remainder is to be let out in offices, for which two separate approaches are arranged,—the one in Corn-street and the other in Small-street. The whole is being executed in Bath stone.

The architect is Mr. James Weir, of London; the contractors are Messrs. E. C. Howell & Son, of the Colston Steam Joinery Works, Bristol. The clerk of works is Mr. W. H. Williams. The carving is being done by Mr. Seale, of London. The floors, it may be mentioned, are all of Dennett's fireproof flooring.

LIME AND BRICKS.

IN the course of the annual meeting of the Iron and Steel Institute, which was held last week at the Institution of Civil Engineers, Great George-street, Westminster, Mr. Edward Riley, F.C.S., read a paper, entitled, "A ready Means of Moulding Lime, and making Lime or Basic Bricks and Linings for Furnaces, Converters, &c."

Mr. Riley said that several plans had been suggested and used for the manufacture of basic or lime bricks, for the lining of Bessemer converters and cupolas, and various attempts had been made to line the same by ramming either with lime or limestone. One difficulty and objection in using limestone either for the manufacture of bricks or for ramming is the very large loss in weight and bulk the material must sustain from the expulsion of the carbonic acid and a little water, the per-centage varying from 40 to 45 per cent. in weight, and the shrinkage in bulk being at least from 25 to 35 per cent. The use of quicklime is impracticable, as it is too dry and pulverulent in its character, and it is impossible to mix it with water, on account of the chemical action of the water on the lime. It occurred to the author that if some cheap liquid could be used that had no chemical action on the lime, it would be possible to mould the lime either by ramming or by pressing it into moulds. Various liquids had been tried, such as crude petroleum oil, coal oil, and resin oil. All these answered very well. Experiments were first made on a small scale, by mixing ordinary lime with from 5 to 10 per cent. of crude petroleum oil, and compressing it by hammering in a small steel cylinder with a piston of about 1½ in. in diameter. It was found that the cylinders of lime, after compression, might be at once placed in an ordinary fire, the petroleum burned quietly off, and left a solid cylinder of lime. If burned at a low to a bright red heat, no contraction takes place at all. If, however, the cylinders are burned at a high temperature, they contract to a small extent. Many hundreds of experiments have been made with different kinds of lime, and no difficulty has been experienced in making perfectly solid cylinders; the only precaution necessary is to see that the lime is well burned, and that it has not been exposed too long to a damp atmosphere. Lime that has been exposed for ten days or a fortnight to a damp atmosphere would not give satisfactory results. Various mixtures of burnt clay and oxide of iron and other substances have been made with the lime. From 5 to 7½ per cent. of burned clay makes it much harder after burning. An admixture of 3 to 5 per cent. of oxide of iron in the form of blue billy also consolidates the lime, at the same time the shrinkage is increased. The above proportions were used with a nearly pure lime. My experiments on a small scale being so satisfactory, I at once commenced to make ordinary bricks, using a Bodmer's hand hydraulic brick-press, which answered admirably. On submitting the lime to a pressure of about one ton per square inch, most perfect bricks were made, and from twelve to fourteen could be readily moulded and forced out of the mould in an hour in the hand press; the bricks could be easily handled, and would bear shaking if taken hold of at one end. These bricks were made at Notting-hill, and had to be carried on a man's back and by rail to my laboratory in Finsbury-square. Although I have made some dozens of the bricks, in no case was one broken; the only injury,—and this is of no practical importance,—was that the sharp square edge on a few was sometimes slightly broken. The only means that I had to burn the bricks was by using a small square assay furnace, 1 ft. square and 2 ft. 6 in. deep. After lighting the furnace, it was filled to a depth of 8 in. to 10 in. with coke, broken small; the bricks were then placed on this material and burned at a moderate temperature for about twelve hours. The three first bricks were quite perfect, excepting that one was broken in two with a sharp fracture, probably due to the falling of the brick with the coke. The lime used was made from Huddlestone stone, which is a fine-grained building stone used in London, the same with which York Minster is built. It is nearly chemically pure magnesian limestone. In burning the bricks, so far as my experience has gone, it is better to use a moderately quick fire instead of a slow, gradual fire. A small experimental converter about 20 in. wide and 20 in. deep, exclusive of top part was rammed up with the ordinary magnesian lime used in Sheffield. The lime was ground in a mortar-mill with from 10 to 15 per cent. of crude petroleum oil. The vessel was first fired with a slow fire, which had the effect of making the upper overhanging part of the converter crumbly, and ultimately caused it to fall. After repairing this damage, the fire was relighted, a gentle blast was put on, and rapidly increased to a full blast. A little roll scale was thrown into the converter, and it was found that a good hard glazed surface was formed after blowing some hours with coke. From 1 cwt. to 2 cwt. of Ferry-hill pig-iron was run into this converter, first adding some iron scale and lime. After blowing a minute or two, a few pounds of a mixture of iron scale and lime were added. It was found, however, that this chilled the metal, and after blowing for rather less than ten minutes, it was thought desirable to run it out. A second charge was then run in and blown about ten minutes, but, from the small size of the converter, and the fear of the metal setting, it was found necessary to run it out again before complete blowing.

The metal from the first blow was so much mixed with cinder and sand that it was difficult to get a fair sample. In the small converter the head was movable, and the lower portion was first burnt with coke. It was found that the lining expanded and rose up above the edge of the plates. Some of the metal remained in the converter on account of its being chilled. The lining was very solid and hard, and could only be detached from the converter by driving in a chisel with a hammer.

The experiments made up to the present time have been carried out under considerable disadvantages. I have only within the past

week had the advantage of a kiln, and am still without a properly-constructed brick-press at Sheffield, so that the bricks may be burned where made. I have succeeded in making and burning several ordinary Bessemer tuyeres for an 8-ton converter as nearly as possible perfect, by simply ramming the lime in the moulds. The kiln I am using requires alteration so as to obtain a higher temperature, and the only means I have at present for making the bricks is under the steam-hammer. The blow, however slight, makes the upper part of the brick scaly, and not solid, as when pressed by hydraulic pressure. I have also found this to be the case in my small experimental cylinders. I have made a few experiments in moulding lime into forms adapted to metallurgical purposes, such as scarifiers, crucibles, &c., and anticipate that my plan for these purposes will be especially advantageous. As yet, however, I have only made scarifiers. I find that bricks and cylinders made from ordinary Sheffield lime may, when burned at a high temperature, be steeped in water without slaking.

The following is the composition of the bricks after burning:—

Silica	8·85
Lime	51·80
Magnesia	35·35
Alumina	2·60
Peroxide of iron	1·40
Sulphide of calcium	·55
	100 55

I regret that, in consequence of the short experience I have had in the manufacture of bricks and tuyeres, and other moulded forms of lime, I am unable to present to the Institute so perfect and practical a description of my process as I could wish. It was only at the commencement of this year that I made my first bricks, and my process requires further time to perfect and develop it.

I hope by the assistance of one of Mr. Bodmer's excellent hydraulic brick-presses to turn out from six to twelve bricks a minute mathematically true. These, I believe, can at once be used to line up a converter or other furnace. The bricks, being perfectly true and square, can be built in almost without mortar or material for the joints; and I see no reason why ordinary converters should not be lined in twenty-four hours, and burnt and glazed in another twenty-four to forty-eight hours. Either the lining of the converter with bricks or by ramming seems to me the most ready and economical means of obtaining a lime or basic lining.

An objection might be raised to the use of large quantities of crude petroleum, viz., that it would materially increase the price.

There are, however, so many sources of cheap crude oils,—as tar and resin oil, &c.,—that any quantity could be produced, and if such oils are required in large quantity, it would pay to distil much of the bituminous shale that is now thrown away for the crude oil, extracting, at the same time, the solid paraffine.

NOTES ON ST. ALBAN'S ABBEY.

ARCHITECTURAL ASSOCIATION.

AT the ordinary fortnightly meeting of this Association on the 9th, Mr. James Neale, F.S.A., read a paper entitled "Notes on the Measurement of Old Buildings, having special reference to St. Alban's Abbey." Mr. H. L. Florence, president, occupied the chair, and there was an unusually large attendance of members.

Mr. Neale commenced his paper by observing that the easiest way of telling his audience how he thought an old building ought to be measured was to describe an actual instance. He could not give a long list of buildings which he had measured as thoroughly as he had St. Alban's. Measuring small buildings and parts of buildings was not what he had in view, but he wished to take his audience through the task of completely delineating a building of considerable size, and therefore he would be pardoned for saying that St. Alban's must be for him that building. Therefore without further preface he would describe what he did there. It is not necessary that we should here go into the description of Mr. Neale's labours at St. Alban's with any minuteness, seeing that we have already* referred in detail to the method pursued by him. Suffice it to say that with the aid of plans and diagrams on the blackboard Mr. Neale entered minutely into the difficulties he had to overcome, and his recital of the way in which they were surmounted testified,—if any testimony other than that given by his recently-published work* were needed,—to his indomitable perseverance and energy. The somewhat dry and technical narrative was enlivened here and there with touches of humour. The magic influence of "beer" in procuring ladders, and the allurements held out by lithographers and admiring friends to induce sketchers to publish, were noticed in passing. From what Mr. Neale stated, it would seem that architectural students are sometimes induced to publish their sketches in the hope of growing rich almost beyond the dreams of avarice, and there was much of practical significance in his advice "to those who are about to publish." That advice may be summed up thus,—"Don't! Or, at any rate, before you do, take counsel with one who *has* published." Mr. Neale having discussed some points to be borne in mind in making sketches for publication, concluded his paper with the following interesting remarks on the architecture of St. Alban's Abbey:—

After measuring a large building like St. Alban's, which happens to afford good specimens of work from the Norman onwards, one is supplied with all the materials for comparisons between work of the same scale in the same materials in different periods. Let us, for instance, consider for the moment the subject of proportion. The difference of expression in the various periods is very considerable, although the total height and the spacing of the bays differed very little. The relation of solid and void is the base of all architectural expression. In a Norman bay of the nave the pier of the ground story or triforium is as wide as the arch carried by it. The width of the glass of the clearstory window is only one-fifth of the distance from centre to centre of the bay. Another valuable help to the memory may be supplied by the statement that in each bay, reckoned from centre of pier to centre of pier, the area of the openings is between one-third and one-fourth of the total area of the wall (more precisely ·293 of the total area). In the Early English bays on the north side of the nave the great piers of the ground-story are less than half as wide as the arches between them. The width of the glass of the two clearstory windows is between one-fourth and one-third of the distance from centre to centre of the bay. These windows supply nearly double (Norman, 30 ft.; Early English, 54 ft.) the amount of lighting found in the bays of the Norman building. The Norman windows are the widest, but the Early English ones are higher, and there are two in each bay instead of only one. In each bay the amount of actual piercing through the wall area is between one-half and one-third (more precisely ·421) of the total wall-area,—reckoning from floor to plate of roof, and considering the triforium arcades in the light of actual piercing of the wall-surface. If these proportions are borne in mind, the strong contrast between the work of the end of the eleventh and the first half of the thirteenth century,—say a period of from one hundred to one hundred and fifty years,—will be seen. The architecture has been lightened in every sense. The relation between solid and void has undergone so considerable a change that, in place of the somewhat unwieldy dignity of the earlier days, we have graceful, vigorous manhood, full of life and spirit, and,—one need hardly say, as this is architecture of the best class,—with a sufficient dignity of its own. In the Decorated period the proportions are not so widely different from those prevailing in the century before as to demand a lengthened description. If a spectator could throw away for a few moments the habit of questioning about detail,—a herculean effort that I am afraid most architects would find beyond them,—and could devote those few moments to standing in front of the Early English bays, and thereafter before the Decorated bays in the nave, he would find their general expression so similar that he might fancy he was looking at two parts of the same work. The spacing of the bays, the dimensions of all the piers, the sizes of the openings, and the scale of the details, are similar. It is but bare justice to interpose in this connexion a mention of the influence of the Norman church on all the work that supplanted it. The height that the Normans gave to their walls, the widths of their bays, the sill levels of their clearstory windows, the impost levels of their ground-story arcade, not to speak of many other coincidences, are echoed in the work of the thirteenth, and, with slight modifications (all improvements, be it noted), in the work of the fourteenth century. To state the reason why the proportions in the sanctuary differ so widely from those in the nave we should be led through a lengthy, albeit interesting, bit of history anent the thoughts and doubts and conclusions of the thirteenth-century builders. The very capable artists who dealt with the sanctuary did not destroy, but they completely altered the work which they found in existence. They kept it,—evidently with great regret,—merely because its removal would have imperilled the safety of the central tower. But almost every bay of this church has its own interesting architectural history, deducible not from records,—the very fallible compilations of untechnical gossips,—but to be read clearly enough by the painstaking student of the language of which construction, proportion, and distinctive detail are the words of power. The Perpendicular period is not represented in this structure to the same extent as the three earlier periods. It cannot lay claim, either, to the very rare excellence and completeness of some of the work of other dates. The abbots commanded skill equal to the best of the time in England, but they directed their efforts merely to the alteration and enrichment of the structure; they were not urged by ambition to destroy and to rebuild, nor to make additions, as their predecessors had been. Thus we find changes constantly going on; massive dignity at the first, then more and more lightening of the masses, grace gained and wall-space parted with. The piers and wall-spaces occupy between two-thirds and three-fourths (really ·707) of the total wall area of a complete bay of the Norman building; they occupied less and less as time passed on, until in the middle of the fifteenth century, the piers were reduced to comparative tenuity. The windows in the end walls of the transepts and nave have an amount of glass that would have filled, within some 8 feet, the whole of the windows in the Norman church.

Let us take up another subject, and institute a few comparisons, such as the form of arches. In the original Norman church, consecrated in 1115, all the arches are semicircular. There are semicircular arches, worked to interlace, in the slype, the work of the late Norman period, 1160. Such interlacing arches have received credit for suggesting the form of the pointed arch, but they are not justly entitled to it. For I may remark, parenthetically, that the real motive for the use of the pointed arch was a constructive one. The sensation of frightful peril felt for so long during the critical periods of the underpinning of the great tower of St. Alban's in 1871 would thereafter allow no forgetfulness of the need for aiding great arches, carrying prodigious loads. Any one who realised the tremendous risks, and saw from time to time the necessarily gigantic shoring, would not fail to bear the impression in memory till memory began to fade. These precautions were necessary because semicircular arches of 24 ft. span are, for 5 ft. or 6 ft. in the centre of their spans, almost as flat as lintels. The tendency to become crippled in those parts was present to the minds of the Normans, and they used stone largely there. This was a slight improvement, by making the wedges more mass-like; but was no such radical improvement as the uniform acceptance of the pointed arch for arches of construction some three-quarters of a century or so afterwards. In the Early English work at St. Alban's, the arches are, without exception, pointed. The advent of the true Early English period,—say 1190,—was marked, as a general rule in England, by the use of an arch of which the form was so acute that it justifies the application of the epithet "lancet," used by Mr. Edmund Sharpe; and as the style advanced the extreme pointedness gave way more frequently to arches struck with shorter radii. It may be useful to some youthful student to remember that St. Alban's furnishes many exceptions; for instance, the arches in the western porches, and in the western bays of the nave, are not nearly so acute as some arches in the eastern part of the church, which are more than half a century later. In the Perpendicular work the four-centred arch is used, and three-centred and elliptical forms also occur.

* *Builder*, vol. xxxvi., pp. 445, 525.

* "The Abbey Church of St. Alban, Hertfordshire."

We will undertake one more comparison with reference to a matter purely of detail,—I mean mouldings. In the Norman period these mouldings are almost non-existent in the original structure. Such stone as was used was shaped with the axe, and the varied and delicate forms of later times would not have harmonised with the broad wall-spaces of the Norman builders. When the chisel came into use, mouldings became possible that previously were quite out of question. In the Late Norman work, shallow hollows and some beads (three forms in all) may be found. In the Transitional work in the aisle we have five independent forms. The gigantic strides of fifty years produced thirty-three independent forms in the Early English bays in the nave. The history of the character of mouldings, in about a dozen words, is:—1. No undercutting, and then a little; 2. Much undercutting; 3. Less undercutting; 4. Little or no undercutting. We are now treating of "much undercutting." The deepest hollow in the Norman building measures ¾ in. from the chord line. In the Transition work there are hollows 2 in. deep from the wall plane. In the north side of the nave there are hollows that are actually 5 in. deep, measuring from a line joining the mouldings on each side of them. And, be it remembered, these mouldings in the three periods are found in work not differing much in scale, if at all. The number of separate forms of mouldings is about the same in the Decorated period as in the Early English. The decrease in the depths of the hollows is very observable. The greatest depth of hollow is 3 in. as against 5 in. in the Early English work, measured in the same way. In consequence of the shape of the hollows being altered in relation to the mouldings adjoining, the sharpness of the shadows is much decreased. The mouldings are not composed of regular curves, but drawn by free-hand. Much of the ease in the groups results from this sweetness of line, where the combinations are adapted to one another. The effect of mechanical harshness, which is one of the crying sins of modern work,—professedly following almost slavishly the work of our early masters,—is avoided. In the Perpendicular work the chamfer-plane is used for mouldings, and the character of the mouldings is much changed. For instance, there are immense casements in the jambs 13½ in. wide by 7/8 in. deep. I could carry you through comparisons touching on the elements and on the refinements of our art which would extend this paper beyond all reasonable limits,—let this be my excuse for terminating abruptly what it has cost me much pains, but given me much pleasure to write and to deliver to you.

In the course of the brief discussion which ensued,

Mr. S. Flint Clarkson moved a vote of thanks to Mr. Neale for his interesting paper, remarking that it was exceedingly kind and generous on the part of Mr. Neale to give to architectural students at large the many valuable practical hints which he was able to give them as the result of his exceptional experience. Mr. Neale had thoroughly identified himself with St. Alban's Abbey, and the work he had done would remain as long as books lasted.

Mr. Aston Webb seconded the motion, which was supported by Mr. W. L. Spiers, and after a few remarks from the Chairman, Mr. Neale expressed his acknowledgments, and the meeting was brought to a close.

THE CHURCH OF ST. SEPULCHRE, SNOW-HILL.

In the course of the discussion which ensued on the reading of Mr. Price's paper * on this church, at the last meeting of the London and Middlesex Archæological Society,

The Chairman (Mr. M. H. Bloxam, F.S.A.) asked if the sacramental plate was of any interest, and whether the fireplaces in the room over the porch were ancient. The will of the schoolmaster, quoted by Mr. Price, was an exceedingly interesting document of the time of Elizabeth.

Mr. Josephs asked whether, in the soil which had been removed from the body of the church, any human remains had been found? He took an active part in the restoration of the Church of St. Mary Aldermary, and he could only hope that in the restoration of St. Sepulchre's there would be removed a great deal that Wren or some one else after him had put there, for much of the work was entirely out of keeping both with what the church originally was and with what it ought to be. No doubt Wren was a very great man, but he made mistakes in dealing with churches anterior to his own time.

Mr. Billing, the architect in charge of the works now in progress, said that wherever it had been found necessary to cart anything away in the shape of soil,—and he did not believe that the quantity removed amounted in all to so much as fifteen cartloads,—the earth had been thoroughly sifted and examined, under the supervision of Dr. Sedgwick Saunders, the Medical Officer of Health for the City of London. Indeed, in every possible way the greatest care had been taken that no human remains should be taken out of the church. Mr. Price's very interesting paper had contained an allusion to the south-east wall having been rebuilt, but he (Mr. Billing) did not think it had been rebuilt, for within the past few weeks he had found the old stone jambs, but they were of an earlier character, as it seemed to him, than that of the Perpendicular building now in course of restoration. The east window he had been requested by the churchwardens to pull down, much to his disgust. In preparing his plans he had to bear in mind that it was stipulated as a *sine qud non* by the vicar and churchwardens that the reredos should be retained. He should like to know whether the documents which Mr. Price had quoted stated distinctly that Wren was engaged upon the reinstating of the church after the Fire, because he (Mr. Billing) was told that there was a tradition in the family of a parishioner, named Hoby, that Wren refused to give a certificate. The workmen would soon be engaged on the walls of St. Stephen's Chapel, in which portion of the church it was proposed to place the organ.

Mr. Jones asked whether the Council of the London and Middlesex Archæological Society were cognisant of what was being done in the works now in progress at the church? As to St. Mary Aldermary, he was sorry that Mr. Josepha's energy did not meet with that resistance which it should have met with. Had it met with greater resistance a great many interesting features of that church would have been preserved.

Mr. Alfred White, F.S.A., said that the Council of the Society were keeping their eyes steadily upon St. Sepulchre's Church, and had done so since their report to the vicar and churchwardens in October, 1873. He did not think that what was done at St. Mary Aldermary could be cited as a precedent for what was now being done at St. Sepulchre's. At St. Mary Aldermary, the architect, Mr. Innes, prepared a plan which was substantially adhered to throughout. The parishioners of St. Mary Aldermary knew at the outset what was going to be done, and there was no doubt that what had been done had been done very judiciously, and the church had been very much improved. In that church there was, he believed, no alteration of level. In fact, the two cases were not at all parallel. With regard to Wren's work in the Church of St. Mary Aldermary, he did not think it had been much damaged. That church was rebuilt a very few years, comparatively, before the Fire of London, and in a very peculiar era, when Pointed architecture was taking very different lines to those pursued by it in former times. The church was rebuilt, in fact, almost at the commencement of the Renaissance. It was not *rebuilt* by Wren, after the Fire, only repaired. In the recent "restoration" of St. Mary Aldermary the fabric had been left substantially as it was left by Wren. What had been removed was no doubt cumbrous stuff, perhaps not exactly suited to our modern ideas of church architecture. He was proud to say that the masonry remained intact, and especially so because the church was one of the two or three instances only in which Wren had attempted to work in the Gothic style. In the case of the present works at St. Sepulchre's, there had been no definite plan presented for the "restoration" or rebuilding of the church. He (Mr. White) believed that neither the architect, the churchwardens, the vicar, nor any one else knew what was going to be done. He begged to move a vote of thanks to the reader of the paper, Mr. Price, to whom the Society owed a great deal for his care and watchfulness in the matter.

Mr. Josephs seconded the motion, and in doing so called from Mr. Alfred White the explanation that his remarks as to St. Mary Aldermary had reference entirely to the interior of the church.

The Rev. Mr. Gibbs, in supporting the motion, said he thought that such a church as St. Sepulchre's presented one of the most difficult problems which the architect could have to solve. It had been well said that the church told its own history, but he could not help thinking that it would never look thoroughly well. It would always look a mongrel,—half Classic, half Gothic.

Mr. Coote, F.S.A., made a few remarks on the history of the parish, which, he said, was unique in London with respect to its churchwardens. One liberty appointed one set, and the other liberty another set of wardens, but although each liberty appointed the wardens in its own division, the wardens were not for that division only, but for the whole parish.

Mr. Billing, in the course of some additional remarks, said that the eastern arch of the tower was one of the finest in the City of London, both on account of its size and of the character of its moulded work. The piers were of Kentish rag, and were as strong as though they were of granite. Nothing that Wren put in St. Paul's could be stronger.

Mr. John Hayes, a former churchwarden of the parish, was invited to take part in the discussion, but he said he could not enter into the subject. He was no antiquary, and could only say,—

> "Give me the thing that's pretty, young, and new:
> The old and ugly things I leave to you."

Mr. J. E. Price, F.S.A., the author of the paper, replied on some of the points raised in the discussion. He said that the Communion-plate possessed no interest except such as attached to it from the fact of its having been stolen by a former sexton, and afterwards recovered from the bottom of a pond. The fireplaces over the porch were modern. As to the question whether it was true that Sir Christopher Wren was ever employed on the building, there surely could be no better affirmative proof than that furnished by his ledgers. The tower and porch had been restored by Mr. Pettit Griffith, without any serious objection, and what was wanted now to make the body of the church harmonise with the tower externally was to put a parapet along the nave. He thought that antiquaries and the public had good cause of complaint in the fact that they did not know what was going to be done, nor was any one else, apparently, able to tell them. The income now accruing to the parish for the repair of the church (from the property of William of Newcastle) was nearly 2,000*l.* per annum, and it had become a question how the money was to be spent year after year. It would be absurd to go on "restoring" the church every few years, but it was of great importance that the works now in progress should be in keeping with what had already been done.

[We note that the legal points in dispute as to the works now in contemplation have been argued before the Consistory Court, but judgment is deferred.]

THE EARL OF SHAFTESBURY ON THE HOMES OF THE METROPOLITAN POOR.

At the annual meeting of the London Home Mission, which was held last week, several of the speakers adverted to the sad condition in which the officers and visitors of the society had found the homes of the poor to be in several parts of the metropolis, and the Earl of Shaftesbury, who was present, incidentally stated that there never was such a capital as London, with its 4,000,000 of people living in every possible form, and in many parts more disgraceful than any other city. He observed that there would be no hope for religion and decency so long as the domiciliary condition of the people of London and of other cities remained as at present, and he therefore called upon the assembly not to cease crying out for an improvement of the domiciliary condition of the people.

We can personally endorse what Lord Shaftesbury says on the matter. And this is the state of things after thirty years' agitation on the subject!

Westminster Industrial Exhibition.—His Royal Highness the Prince Leopold has consented to become president of this exhibition, which will be opened on Saturday, the 24th inst.

* *Builder*, p. 522, *ante*.

THE PURPOSE OF ART.

AT the opening of the Yorkshire Fine Art Exhibition Building, illustrated in our last week's issue, the Archbishop of York, who delivered an inaugural address, in the course of it said,—

In order to answer the question, What is the use of art to a people, and why should we teach it? we must pause for one moment upon the soil of theory; and of no subject, perhaps, is the theory more debatable. We shall all agree that art is not mere imitation. If that were so, the photograph of a building (I do not say of a landscape, on account of the false colouring) would be the highest product of art. Because the power of imitation is requisite for the painter, and is the power most easy to appreciate for the untaught spectator, and because realism is the most prominent tendency at present, skilful imitation is sometimes confounded with art. It may happen to be the enemy of art. The bespattered boots of the fallen Emperor in Delaroche's great picture attracted very often the attention due to the head and bent figure, heavy with the weight of a crushed empire, with the ruin of a thousand schemes of a selfish life. Interpretation, not imitation, is the artist's function. "Every natural object," says Victor Cousin, "however beautiful, is on some side defective. Here the humble and the hideous unite with the sublime, there elegance and grace are separated from grandeur and force. The features of beauty are scattered and divided. To unite them, borrowing from one face a mouth, and eyes from another, without any rule to preside over the choice and to direct the borrowings, is but to compose monsters; and when you admit such a rule, you thereby admit an ideal different from all individuals. It is this ideal which the true artist forms for himself in the study of nature. Without the study of nature he could never have conquered the ideal; but with it he judges Nature herself, he corrects her, and he ventures to undertake to measure himself against her." Let us take at a venture three examples, in this year's Academy, of the truth of this theory,—"The Waning of the Year," by Mr. Parton; the portrait of Mr. Gladstone, by Millais; and the Flight of Dr. Brydon, the one survivor of the Khyber Pass. In one sense they are imitations of an autumn landscape, of a statesman's face, and of an exhausted horseman and a spent horse. It is not the imitation, however, which makes the charm of each, and will arrest the admiring eyes of thousands in the coming weeks. No; in the one case the artist is confronted with an autumn scene, and it speaks to the artist of the decline of the year, and the withdrawal of its exuberant summer life. The sadness of such a scene, or at least its solemnity, comes from within; for it reminds us of the waning of our own year of life. The thought of age, of oncoming winter and death, all enter into the artist's ideal of such a subject, and, in consequence, all that tends to speak the same feeling to other minds will come naturally to the pencil, whilst features in the real landscape that are void of significance, and would hinder the expression of the idea, will fall away. So the portrait of the statesman comes from one who could understand that he was in the presence, not merely of a strong and vigorous head, but of one which is the speaking record of a long, earnest, passionate career, marked with its force, but also with its sorrows and disappointments. The result is a portrait which will never be forgotten. I learn from the *Times* that some people find that the coat is thinly painted, and that sufficient care has not been bestowed on that indispensable garment. The *Times*, of course, rates that criticism at its proper worth. I am free to own that I have no recollection of the coat. The third picture, less bound to imitation,—for no one would expect that at this distance of time horse and man should be exactly reproduced,—bears its idea out with even more clearness: alone, exhausted, snatched out of universal death, and sustained by sheer force of will to the end of the desperate flight, amidst an arid, stony landscape which says "expect no help nor shelter, of roof or tree from me"; the man has come back to tell of a powerful army blotted out, of the shame and humiliation of a great people. Some one will say that, at this rate, truth is sacrificed; that if the artist gives us not true reproduction, but extracts and fragments of nature, he cannot be trusted. The answer is, that this is the very problem of art, to interpret nature, without detracting from her; to give the maximum of thought with the minimum of loss of exactness. The artist would lose his power, if the landscape were not such as we can see for ourselves; the portrait would gain no admirers if it were pronounced unlike, exaggerated, or distorted. In Hogarth's didactic series, as in "The Rake's Progress," the realism of every picture is what strikes us most. Just such features were in those rooms when they were the scenes of that soul's tragedy. And yet, on closer observation, you see that every feature is carefully selected to conspire towards the common effect. It would not have been so in reality; something or other would have been found which did not aid the story, and the artist must have the benefit of all the accessories, for he has much to tell, and little means of telling it, only such signs as he can gather, without violation of nature, into the four corners of a limited canvas. You find in it the fidelity of a Dutch picture, and I find the perfection of arrangement: the combination of these is the artist's secret and his triumph. This ideal of the artist, what is it? whence does it come? Upon this the world is divided. Is it that the world is but the development of an idea, and that in the mind of man the idea exists, and needs to be evoked, so that man goes before Nature, interprets her, and knows what she tends to and strives towards with throes and struggles through ages? This transcendental view is not in favour at present. It is the view of Schelling and others. Or is the ideal no more than the abstraction, by a cultivated mind, of the special features of many observed scenes of beautiful nature or beautiful life? I shall ask you to avoid the thorny path of this discussion, that we may keep our heads clear for the works that we are presently to study. But there are some things on which we can agree and which we can all understand. The critic and the artist are alike in taste for the beautiful; they differ in the creative element. The artist must not only observe; he must speak. He finds a necessity laid on him to communicate to others his ideal of beauty. This feeling is called inspiration; it is the demon of Socrates, and the word genius is akin to that. Such a gift is sure to carry with it an element of pain; and the more intense the longing, the greater the suffering is apt to be. "Art is long and life is fleeting;" and the resources of expression are limited. Ere the inner ideal can get itself interpreted, much scorn from a world unaccustomed to a new mode of interpretation may have to be borne. Then artists must live; and to yoke Pegasus to the market-cart, and to subdue his paces to such a use, is a degradation. Some defect of eye or hand shows itself, intractable to all teaching; it will fetter and hinder for ever the artist's power of expression. With such limitations without, and such an imperious call from within, there cannot be unbroken peace; there must often be exquisite pain; exquisite, because the whole temperament of the artist is sensitive and finely tuned. . . . . .

THE HERTFORD COUNTY GAOL.

UNDER the operation of the recently-passed Prisons Act, the Hertford County Gaol, the governor's house, chaplain's house, and grounds were offered for sale by auction last week at the Mart, by Messrs. Fox & Bousfield. The property was described as being situated close to the town of Hertford, and, in addition to the buildings, to contain nearly three acres of excellent building land. The property was submitted in two lots, the first lot containing the gaol and the governor's house, comprising nearly two acres of land, which, it was stated, was admirably adapted for building operations, in which the mass of sound material in the gaol buildings could be readily utilised. The property was said to afford an excellent opportunity for supplying the demand for houses, which were much wanted in the neighbourhood of Hertford. In introducing the property, Mr. Fox, the auctioneer, stated that land in the neighbourhood of Hertford was worth 800*l.* an acre, when a gentleman present said the auctioneer had overrated the value of land in the locality. Mr. Fox, however, warmly rejoined that he knew it was worth that sum, and as he could prove it, he was not to be put down. The bidding commenced at 2,000*l.*, and after a spirited competition the property was sold for 4,000*l.* The chaplain's house adjoining, with the grounds and one acre of land, was next offered, but the highest bid being 1,410*l.*, the property was withdrawn.

CALCIUM WHITES.

THE account of the preparation of Blanc de Meudon, in the *Builder* of May 3, suggests a notice of whites derived from lime generally, which will probably interest those concerned with the employment of these materials.

It was even with Pliny a regret that in proportion as the number of pigments increased, and more brilliant ones were introduced, art seemed to decline from the nobility and permanence which had characterised its earlier and simpler phases. I fear we have at the present day too much reason to echo his complaint; for the brilliance and variety of the modern palette have certainly a tendency to blind the artist to a due consideration for the stability of his work.

The subject is perhaps of sufficient importance for me to give some reasons why I believe that whites, essentially the same as that prepared at Meudon, date their use to very ancient times.

Chalk in greater or less purity is found plentifully in nature, and was therefore probably one of the earliest colours used. Some of the rudest savages use it among their war-paints. It was one of the four pigments to which, as early writers commemorate, the palette of the pristine artists was limited. Theophrastus, indeed, expressly mentions its employment by painters. To go, however, no further back than Pliny, who possibly only copies from Theophrastus, we find that he mentions among the white pigments a substance undoubtedly little differing from the chalk whites now prepared at Meudon. In book XXXV., chap. 19, he tells us "Melinum is white also. The best is supplied by the island of Melos. It is also found at Samos; but this last-named is too fatty to be used by painters. The people engaged in obtaining this substance lie down flat to find the vein among the rocks. It has the same medicinal properties as Eretrian chalk." Sir Humphrey Davy informs us, too, as the result of his analyses, that the white colours found at Pompeii, and those used in the decorations of the Baths of Titus, consisted of chalk.

There can be no doubt that essentially similar preparations have remained in use in the arts from the Classic times throughout the Middle Ages until our own day. One special use of them was to mix with size in order to form a ground for leaf-gilding, which should be hard and durable, and at the same time capable of a high burnish. In gilding as old as the twelfth century we find a white ground of this sort, and antiquities discovered in Rome prove the use of a similar plaster, or "gesso," for the application of gold in classic times. I have no doubt that its use in this way has been handed down to our own times as a "trade secret," and is much the same as that now employed by our "*water-gilders*." A "gesso" of this sort was even used for gilding the backgrounds of miniatures in books, and often with such skill as to offer the appearance of laminæ of smoothly polished gold.

Illuminated manuscripts, indeed, are the veritable ark wherein have been conserved to us the tablets of art history through the boisterous times of the Middle Ages. Careful examination of these gorgeous volumes will, I think, convince most observers that a chalk white of great body was used also as a pigment; for the whites are most pure and brilliant even in the finest hair-lines. It is difficult even with the best modern whites to execute lines of the same fineness and delicacy, and yet body and brilliancy, as we marvel at in these reliques of an art too slow and laborious for this age of rapidity. What, however, is more to our present point is, that these old whites do not blacken and tarnish as white-lead does when used as a water-colour. Yet these ancient manuscripts were always executed in water-colour, the mordants employed being white of egg, gum arabic, and occasionally a little yolk of egg and animal size. It must be remembered that the permanent zinc white was not then known. It is, of course, true, that books being normally closed, have especial immunity from the injurious effects of light and of noxious gases, still this is not enough to account for the wonderful preservation of the brightest colours in these admirable paintings, and we are led to believe that the pigments were prepared in some careful and secret manner which seems in some instances at least, to have surpassed our present processes. F. Lefort ("Chimie des Couleurs") says of these chalk whites that they "possess most of the physical properties of zinc whites."

In a manuscript written, or rather copied, in the fourteenth century, and of an origin probably much earlier than that date, and which is now in the British Museum, an Apuleian white ("Album de Apuleya") is mentioned, and it is specially stated that this white may be mixed with orpiment,—a wise caution to the artist to substitute it, in such a mixture, for ceruse, which would react chemically upon the orpiment. This must have been a chalk white.

Cennino Cennini wrote his treatise on painting at the beginning of the fifteenth century. In chap. 58 he describes a white pigment called *Bianco San Giovanni*. I quote from Mrs. Merrifield's translation,—"There is a natural white pigment which, however, requires some preparation. It is prepared in this manner:—Take very white slaked lime; pulverise it, and put it into a little tub for the space of eight days, changing the water, and mixing the lime and water well together, in order to extract from it all unctuous properties. Then make it into small cakes, put them upon the roof of the house in the sun, and the older these cakes are the whiter they become. If you wish to hasten the process, and have the white very good, when the cakes are dry grind them on your slab with water, and make them again into cakes and dry them as before. Do this and you will see how perfectly white they will become."

The foregoing considerations, I think, leave no doubt that chalk whites have been long in use, and the sooner a good white of the same sort is prepared for the *aquarelliste's* palette the better for the permanence of water-colour drawings.

H. WILSON.

FURTHER DISCOVERIES BY DR. SCHLIEMANN.

BERLIN journals publish a letter of Herr Virchow to one of the Council of the Berlin Anthropological Society, in which the writer expresses himself to the following effect on the excavations of Dr. Schliemann at Troy:—"Schliemann is having a great part of the surface cleared away entirely, in order to completely expose the 'Trojan' city. In this operation colossal masses of burnt material have been laid bare. Large blocks of unburnt loam, in the form of flat squares, which have been used in the construction of the wall, have been burnt to melting-point; they are completely glazed over. To-day (April 10), in my presence, a new 'treasure' of gold, quite similar to that illustrated in the sixth part of the *Zeitschrift für Ethnologie*, including long chains, was found, as well as a series of gold disks, such as were of frequent occurrence at Mycenæ. I am consequently able, from my own observation, to bear testimony to the truthfulness of Schliemann's descriptions. He is a man of indefatigable activity, and his endurance and perseverance are really wonderful. As M. E. Bournouf is also staying here, the authenticity, at any rate, of these last excavations is completely ensured."

This is all very polite and well intended by Herr Virchow, but we are not aware that any one in his senses has as yet pretended that Dr. Schliemann did *not* find the treasures he has laid before the world.

ARCHITECTURAL ASSOCIATION.

THE special business meeting called for Friday, the 18th ult., not having been held, in consequence of the non-attendance of a sufficient number of members to form a quorum, the ordinary general meeting held on Friday evening, the 9th inst., was preceded by a special meeting, Mr. H. L. Florence, president, in the chair, when it was unanimously resolved to agree to the following alterations in the rules:—

Rule 10.—To insert after "proposal of two members," the words "and also of rejecting any proposal." To omit the words "Every nomination shall be made at a General Meeting," and to substitute for them "The nomination shall be made at the first General Meeting in each month." To omit the last two words in the Rule, and to add, "In any particular case, if demanded at a General Meeting, or by letter addressed to the Honorary Secretaries. In this case the election to be postponed for at least a fortnight, and notice to be given at a General Meeting, and sent to the Proposer and Seconder by the Honorary Secretaries, at least a week before the election."

A new form for the nomination of candidates was also laid before the meeting and adopted.

At the ordinary meeting, Messrs. J. S. Nanson and A. Whitelaw were elected members.

A vote of thanks was tendered to Mr. F. C. Penrose for his kindness in conducting a large number of the members of the Association over St. Paul's Cathedral on the 3rd inst.; and it was announced that the next visit would take place this Saturday, the 17th inst., to the Highgate Infirmary, situate at the junction of Highgate and Archway roads, and recently illustrated and described in the *Builder* (pp. 227-9, *ante*).

A vote of thanks having been accorded to the Entertainments Sub-Committee for work done in connexion with the Members' *soirée*, held on 25th ult.,

The President announced that the Water-colour Class, under the tuition of Mr. Sutton Palmer, would commence work on the 19th inst. The Surveying Class would also be resumed very shortly, provided that not fewer than twelve members signified their intention of joining it.

Mr. James Neale, F.S.A., then read an interesting paper, entitled "Notes on the Measurement of Old Buildings, having special reference to St. Alban's Abbey." The substance of this paper we publish on another page.

At the next meeting of the Association, to be held on the 23rd inst., the officers for session 1879-80, will be nominated, and Mr. W. Penstone will read a paper on "Late Wrought-iron Work."

VISIT TO THE TEMPLE CHURCH.

THE members of the St. Paul's Ecclesiological Society met on Saturday, the 10th inst., in large numbers, at three p.m., at the Temple Church, which Mr. Seddon had undertaken to exhibit and describe to them, permission having been kindly granted by the sub-treasurer and the master of the Temple. They were met by Mr. St. Aubyn, the architect in charge of the church, who had been good enough to hang up conveniently for inspection within the church a goodly array of drawings, both general and detail, together with the set of drawings of the Temple Church by his present assistant and former pupil, Mr. Langford, which have obtaind the silver medal of the Royal Institute of British Architects.

After an inspection by several of the members of the remains of St. Anne's Chapel, outside the round church, to which access is obtained by an opening in the pavement of the court, Mr. Seddon conducted the party through the fine western portal, which is under part of the old cloisters, and now forms a porch to the church. He first read some extracts from Stow's "Survey of London," which gives interesting particulars of the order of the Knights Templars, established A.D. 1118, for the protection of pilgrims visiting the Holy Sepulchre at Jerusalem. Many noblemen throughout Christendom joined this order, and temples were built for it in every large city in England; but this, the chief one in London, all being after the form of that at Jerusalem, on a circular plan. The first temple of the order in London had been in Old Bourne (Holborn). Of this some most interesting remains were recently discovered, but, unfortunately, have been since destroyed. In 1185 this was abandoned, and the extant noble structure commenced in place of it, and dedicated by Honorius, Patriarch of Jerusalem, who was on a visit to England to endeavour to engage Henry II. in the Crusades. The round part of the church is a most excellent example of the architecture of the period of the Transition, on which Mr. Seddon had on the previous Wednesday read the paper to this society which we have given elsewhere.

The mixture of the pointed with the round arch, the characters of the splendid compound pieces of Purbeck marble, the dignity and stateliness of the proportions as compared with the lovely but slighter work of the Early English portion of the church eastward, of fifty years later, were pointed out, with all the minutiæ of the details of each. After the party had carefully inspected the whole of the building, and the drawings of Mr. St. Aubyn and Mr. Langford, and examined the restored monumental effigies of noble companions of the order (not members of it) which are on the floor of the round church, they were taken over the very fine Elizabethan hall, which, with its richly carved screen, was extremely admired. The party then proceeded to view the crypt of St. John's, Clerkenwell; on the way they passed under the gateway of the old priory of that rival order of the Templars, and were gratified to be told that the Order of Hospitallers was still in existence, or had been revived, and that Sir Edmund Lechmere was the present head of it, and that it had been enabled to purchase the gateway and advowson of the church, so that both were practically made safe for the future.

At the church, where the party was met and welcomed by the rector, the Rev. Mr. Dawson, Mr. Seddon resigned the conduct of the party to Mr. Birch, who has written a paper upon it, which will be found in the volume of this journal for 1876, and to which we may refer our readers for information with respect to this interesting relic. The crypt is on an unusually large and sumptuous scale. What remains of it was under the choir and its aisles, and is partly of the date of the Transition, viz., the two easternmost bays, and the rest is of Early English, so that here again the gradual development of the Gothic principles of construction and ornament was explained to the assembly, which then broke up, well pleased with the manner in which the programme for their meeting had been carried out.

ST. SEPULCHRE'S CHURCH, SNOW-HILL.

SIR,—In the concise and correct notice of Mr. John E. Price's interesting paper, reported in the *Builder* of last week, are omitted a few points of some importance. In consequence of the damage by the Great Fire, Sir Christopher Wren strengthened the four great piers supporting the tower, by inserting semicircular arches and columns; these have been wholly removed, and without any strutting or shoring, until the shafts have been restored. The result is, the tower has bulged, and the stone staircase is filled with concrete, the bellringers having to ascend the belfry by a ladder. Mr. Price, also, does not mention that the seventeen bosses in the groining of the porch have been wholly knocked off and destroyed. The windows now being inserted in the south wall of the church are of a Flamboyant character, and not as designed by Sir John Popham; this can be proved by engravings and drawings in existence. It is very unusual, and somewhat remarkable, that this interesting church should have been taken to pieces prior to "any definite plan having been agreed upon." The tenders for these works have been published in the *Builder*. The highest was 12,620*l.*, and the lowest accepted was 7,275*l.*! The anticipated cost was 5,000*l.* By the time the works are completed they will cost the same as if the body had been restored to its original state.

W. PETTIT GRIFFITH, F.S.A.

LONDON CHURCHES.

SIR,—Allow me to thank you very much for the reproduction, in your number of May 3rd, of the picture, "The Threatened City Churches."

I think I may claim an almost unique experience, even among London men, in the fact that I have attended divine service in nearly every church within the City boundaries. Every edifice represented in your picture is familiar to me; and I cannot but regret that these buildings should not be preserved from the warehouse mania which has set in so strongly. But as long as lovers of architecture, and even those who would wish to have our City churches spared, will not move a finger or spare one penny in their defence, it is to be feared that ruthless speculators, who see only in the sacred ground occupied by these memorials of the past so much "eligible" building-ground, will be allowed to have their destructive way. Looking upon your picture, it is pleasing to see that some,—St. Mary Aldermary, for instance,—have weathered the storm which at one time threatened to destroy them. It remains for us jealously to guard the remainder.

I am afraid you will consider this letter but an expression of "gratitude for good things to come," when I ask if you cannot also reproduce the other two pictures of City churches which you mention in your article. Twenty-five years is a long time. Those who saw your pictures then will welcome them again; while those who knew not the *Builder* of that epoch will be only too glad to see them for the first time, as I shall.

R. CLARK,
Secretary Tyndale Memorial Fund.

The Seat of War.—War has one advantage, it leads to the study of geography. Mr. Wylde has published a new map of British South Africa, showing the successive acquisitions and the topographical details of the Cape colony.

ROMAN REMAINS IN GERMANY.

AN interesting discovery has been made in the communal forest of Eutingen, near Pforzheim (Grand-duchy of Baden), on the occasion of the construction of a new roadway through it. The workmen, at not quite 1 ft. below the surface, came upon a male statue of white sandstone, beautifully formed, but unfortunately without head, and otherwise much injured. With it they found some copper coins, the point of a javelin iron, and a number of hollow tiles. The objects have been transmitted to the Grand-ducal Archæological Collection at Karlsruhe, and there their undoubted Roman origin was determined. The sandstone figure is a Mercury, resting on the caduceus, and carrying in his satchel a kid. The coins are sesterces and asses of the time of Emperor Antoninus (A.D. 138-161), and probably of Trajan (A.D. 98-117) and Commodus (A.D. 180-193). The spot where these objects were found, together with dressed building stones, is close to a former Roman road leading from Pforzheim to Oeschelbronn, which at the present time still serves as a footpath, and is known by the name of "Post Road." It is suggested that there may have been here (as we find in other places) a small sanctum to the god of commerce. During the last few years various Roman remains have been discovered in the neighbourhood of Karlsruhe. Thus at Stettfeld, in 1875, at a spot called the "Swedes' Fountain," the remains of a fountain, consisting of the somewhat mutilated head of a fish-goat and the upper part of a votive stone, with the inscription:—"In honorem divinæ Domus æneatores" (corps of trumpeters) "Sueton Cæsar [cohortis XXVI voluntariorum civium Romanorum]." In another instance Count Normann had some interesting Roman anticaglia disinterred in the tower of his castle of Obergrombach. Near the castle of Ettlingen a fragment of a Roman inscription, CONF, was found (probably CONFLUENTES), whence has arisen the name of Coblenz. In digging for the foundations of a new church in Schöllbrunn, in 1878, an altar covered with reliefs representing Hercules and Hippolyte, Minerva, Mercury, and Juno (Ceres?), was met with. It is preserved in the Hall of Antiquities at Karlsruhe.

A MUSEUM OF CURIOSITIES AND ITS LATE OWNER.

FOR many years past there resided in Charterhouse-square a Mr. Snoxell, a name not unknown to collectors, sight-seers, and to a pretty large circle of old citizens. Early last month the ardent old collector and husbander of varied and rare objects amassed during a long lifetime, died at the age of eighty-three. The collection which now, as we hear, is about to be dispersed by Messrs. Puttick & Simpson, is certain to command attention, if it were only on account of the relics of Handel, which, according to the catalogue, include not only the watch and original will of the great composer, but also his portrait, by Woolfand, and the hammer and anvil used by Handel in composing the "Harmonious Blacksmith."

Some years since we heard that the British Museum authorities, on learning that Mr. Snoxell had Handel's watch and will, were anxious to obtain them, but they were said to be equally anxious at the same time to know how, and when, and where their possessor obtained them. Mr. Snoxell volunteered no information in respect to the latter, and contented himself with remarking that he *had* Handel's watch and will, and that that was sufficient. He also said that it was possible the British Museum might obtain them after his death, but while he lived he intended to retain them in his own possession. The catalogue includes singing-birds, automaton clocks, upwards of 600 valuable miniatures, and about eighty paintings, chiefly of subjects connected with music. There are a number of rare prints relating to remarkable places, subjects, incidents, events and characters, autograph letters of Johnson, Burns, Evelyn, &c., medals, bronzes, musical instruments, library and standard works, and sundry other articles and objects of interest. Mr. Snoxell himself, though he was not exactly what might be truly termed an eccentric man, had some traits of eccentricity in his nature. To wit,—a notice outside his door warned passers by and visitors that there were "no lodgers" within, and on the landing without his hall-door there was framed a trap so constructed that the ancient collector could, if he willed, by moving a certain lever or appliance, have dropped a "troublesome customer" fully 6 ft. below the previous level of his feet. We do not know whether the late resident of Charterhouse-square ever scared any intending burglars by "letting them down," or whether his drop-table was more usefully applied in the reception of goods intended for the lower regions of his odd museum.

A NEW VESTRY-HALL AND FREE LIBRARY FOR BERMONDSEY.

THE Bermondsey Vestry are taking steps for the erection of a new vestry-hall in the parish, in connexion with a free library. At their last meeting the Vestry-hall Committee presented a report, in which they requested the Board to give them power to purchase a site for a new vestry-hall, free library, and a public hall, in Tranton-road, if the same could be obtained at a fair price. Several members of the Vestry objected to the proposition being carried forward at a time when the trades of Bermondsey were especially suffering from the general depression, and it was also urged that the site proposed was ill suited. A resolution having been moved to the effect that the consideration of the question be deferred until the next meeting, Mr. Cyrus Legg, in seconding the resolution, observed that the proposed buildings, if carried out, would cost the parish at least 50,000*l.*, and that under existing circumstances the Vestry was not justified in incurring such an expenditure. The proposal to erect the new buildings was, however, warmly supported by a considerable majority of the members present, and after a long discussion, the request of the Committee was granted. Steps will therefore now be taken with a view to the proposed buildings being erected.

NEW STATION EXTENSION AT LIME-STREET, LIVERPOOL.

THE alterations and extensions here, which are now approaching completion, have occupied a considerable period; and when these are in order for regular traffic, the station, it is said, will be the largest in the United Kingdom. About three years and a half ago the work of excavation for the extension was begun by Messrs. Taylor & Thompson, contractors, and the difficulty of their work may be imagined when it is stated that the cuttings had to be made wholly through solid rock. Mr. E. W. Ives, C.E., was entrusted with the contract for carrying out the erection of the roof. Mr. Ives has already made his mark in this direction in connexion with the roof at Woodside station, the Metropolitan Railway works, the bridge at Farringdon-street station (where, in the course of seven months and a half, he put up about 900 tons of iron, the whole erection costing 37,000*l.*, while between 1,300 and 1,400 trains passed underneath daily), and also in his designs for the whole of the large bridges on the Central Railway stations to Manchester. The actual erection of the ironwork in the roof of the extension at Lime-street was commenced under his direction on the 6th of April, 1878, and the whole of the roof has been put up at the rate of three bays per month, each bay weighing 62 tons, the work including the removal of the ponderous staging, which in itself weighed 540 tons, from one position to another; and it may be an interesting fact to engineers to know that one of these bays was completed in the short space of five days and a half. There are altogether eighteen bays in the roof,—the ironwork weighing somewhere about 1,800 tons,—in connexion with which there will be 84,000 square feet of glass, four-fifths of which are now completed. The west gable screen, facing Lime-street, remains to be done, but all the work in this direction will probably be finished in the course of three months. The roof is arched, with diagonal struts, and flat bar bottom tie-rods. The total rise to the top of the boom is 42 ft., and the rise of the tie-rod is 25 ft. The roof is supported on cast-iron columns, each of which weighs 11 tons. The columns of the old station and new extension are braced together with iron rings, so as to give them greater stability. When completed, as already stated, it will cover the largest area of any station in England, in two clear spans of 200 ft. each. St. Pancras station, London, which is supposed to be the largest now existing in the kingdom, is 243 ft. in width, as compared with about 410 in the Lime-street station, and the average height of the latter is 82 ft.

The whole of the ironwork has been manufactured by the Darlaston Bridge and Roofing Company, who also supplied the iron for the old station; and the glass was made by Messrs. Chance Brothers, of Birmingham. During the progress, Mr. Stevenson, chief engineer of the London and North-Western, and Mr. Thornhill, assistant and resident engineer, have bestowed great pains upon the proper carrying out of the great undertaking.

THE LIVERPOOL SEAMEN'S ORPHAN INSTITUTION.

OPENING OF A NEW SANATORIUM.

A FEW years ago a Seamen's Orphan Institution was erected in one of the public parks on the east side of Liverpool, chiefly by the subscriptions of the local ship-owners. A short time ago an epidemic broke out amongst the children in the institution, which almost led to its being temporarily closed. This has been followed by the erection of a sanatorium in connexion with the institution, at a cost of 4,000*l.*, which has been entirely defrayed by Mr. R. Brocklebank, one of the oldest and largest shipowners in the port. The building was opened by the Mayor recently, with much ceremony, in the presence of a large gathering of merchants and others. It forms a detached block, but is connected with the orphanage itself by a covered corridor. The architectural design is in keeping with the orphanage, and constructed of the same materials, viz., grey bricks, with red brick window dressings. Internally, the building contains the administrative department on the ground floor, consisting of the offices, the surgery, and medical officers' apartments, together with kitchens and store-rooms. The upper portion of the building contains the sick wards, with dormitories for fifty children. It is intended to apply the building to a double purpose, and it will be used for teaching the girls in the institution cooking and laundry work when not occupied as a sanatorium. In addition to the two buildings now erected in connexion with the institution the erection of a residence for the chaplain is contemplated.

The architect of the sanatorium is Mr. G. F. Grayson, and the builders are Messrs. Holme & Nicol.

NEW POST-OFFICE, CORK.

IN a few days the new Post-office, in Old George-street, will be handed over to the Postal Telegraph authorities by the builders. The officials have purchased the site of the old theatre. The temple of Roscius has passed away, and in its place is the practical pile, where letters are posted and from which telegrams are transmitted. This building has been erected at a cost of 8,000*l.*, and though not at all what it should be as regards exterior appearance, it is solid and substantial, possessing internally a variety of modern improvements. The first story is entirely of limestone, and the others of local sandstone, with dressings and cornices of the limestone. There are three tiers of boxes that will be disposed of in the usual way, for letters, newspapers, &c. On entering the doorway there is a large hall, on the left-hand side of which is a fine room, 60 ft. long by 38 ft. broad. This is called the "sorting-room," but for the present a portion of it will be thrown open to the public for the purchase of stamps, transmission of telegrams, &c. The entire front portion of the building is devoted to the postal department, and the rear portion to the telegraph department. Behind the sorting-office on the ground-floor are the telegraph stores and waiting-rooms for the messengers. A noticeable feature in the new post-office is the extensive use of concrete. The division walls, steps of stairs, arches and floors, are made of concrete, and this is the first place in Cork in which every step in a flight of stairs, numbering nearly 100 steps, is composed entirely of concrete. The steps and landings are cast in concrete, with iron balustrades and massive oak handrails. The back room on the first floor is devoted to the telegraph department, and is called the "instrument-room." It is 60 ft. long by 60 ft. broad, and is lighted and ventilated by an open roof. The first floor in front is taken up by the postmaster's and other offices, and

the top story is also occupied by offices, utilised by those employed in the telegraph department. The building was designed by Mr. Owens, architect to the Board of Works, and the contract was carried out by Mr. Richard Evans, Cork. Mr. James Williams was clerk of works.

THE PROPOSED NEW ROAD, RAMSGATE.

We reported in our last issue the award of premiums to competitors made by the professional referee, Mr. Abernethy. Mr. A. Cumings, to whom the first was awarded, thus describes his plan,—"In submitting a design for the proposed new road, I shall briefly call your attention to what I think are the three salient points to be considered,—(1) the route, (2) the construction, and (3) the cost, hoping that I may succeed in impressing you favourably with the view which I have taken of the subject generally.

The Route.—In the opinion of the author of this design, the route of the proposed road shown on the Parliamentary plan is very nearly as good a route as can be selected. Certain modifications of it are, however, recommended, which will be found to be in accordance with the printed conditions and requirements, and are as follow:—First, the road has been brought more to the south between Twenty-steps and Albion-hill; and secondly, on the East Cliff it has been brought to the edge thereof. This last alteration is suggested as a decided improvement on the Parliamentary plan, on the ground that this portion of the road being a sea-view promenade it should be as near to the sea as possible, without any intervening objects to intercept the view. Ample means of access to the new road are provided from the adjacent street, and a ready communication established between the new road and the sands, railway station, harbour, &c., by the widening of Kent-terrace and steps. The Military-road will be improved by being slightly widened in front of the proposed viaduct, but the Inner Harbour will be in no way affected. The gradients of the road are the same as those on the Parliamentary plan, which are about the best that can be obtained.

The Construction.—The road is proposed to be 25 ft. wide between the kerbs, with two paths, each 12 ft. 6 in. wide, and would be formed with 4 in. of flints or 4 in. of gravel, on a foundation of chalk or dry filling; the paths would be asphalte on concrete. Commencing at the west end, the new road would be carried on a viaduct having its foundations in the Military-road. This viaduct would be constructed almost entirely of concrete, and consists of seven bold arches with their connecting piers, with a bold moulded cornice over the same. Red brickwork would be used in certain portions, as shown on detail drawing. Passing on from the east end of this viaduct, the road is carried over York-street on another viaduct of a plainer and totally different character. Crossing Harbour-street it runs between retaining walls until it arrives on the existing levels on the East Cliff Promenade. The last-mentioned viaduct and the retaining walls would be built of concrete, faced with red brick. A handsome cast-iron ornamental parapet runs throughout the length of the road, with Portland stone pedestals supporting coupled standard lamps of a bold and ornamental character, and it is thought that the appearance of the road when lighted up in this manner would be highly satisfactory. Provision has been made in the estimate both for the lighting and drainage of the road.

The Cost.—The tender submitted with this design has been supplied to the author by one of the first contractors in London, and has been framed on quantities carefully taken out by an experienced surveyor. The committee may therefore rely upon it that this design can be carried out for the sum named on the drawings in a thoroughly complete and satisfactory manner.

In conclusion, I beg to state that I have deliberately ignored the idea of iron as a prominent material in the construction of the road, being of opinion that it is unsuitable for the purpose, both on the ground of constant expense in the matter of repair, painting, &c., and also because it does not present that bold and striking appearance to the eye that a stone or concrete structure does. I do not think it would be more economical in the first cost than concrete, whilst I am quite certain that for permanence and cheapness afterwards it would bear no comparison therewith. In brief, I beg to offer for your considerate notice a design that I hope will commend itself on the ground of suitability, durability, and economy, and thus justify the motto I have adopted."

The cost is estimated at 40,982*l.* 14s. 11d., exclusive of any sums to be paid for purchasing property, or as compensation. We wonder if 41,000*l.* would not have been as nearly right?

Mr. Abernethy, in accepting the office of judge, wrote to the chairman of the committee,—"I shall be happy to undertake the duty of referee as regards the designs for the premium-fee charged by engineers in my position,—viz., one hundred guineas." This is information.

THE UNIVERSITY CO-OPERATIVE STORES.

CONVERSION OF THE QUEEN'S THEATRE.

The reconstruction of the interior of the Queen's Theatre, in Long-acre, for the purposes of the University Co-operative Association, by whom it has been purchased, is at present in progress, and the contractors are under an engagement to complete the works by the end of June, when the stores are to be opened for business. The whole of the interior of the auditorium and stage departments of the theatre have been cleared away, the main walls only remaining, and the entire area, which is 125 ft. in length and 54 ft. in width, is being converted by the erection of four spacious floors and a basement, of uniform dimensions, and when completed, the aggregate floor area, including four other floors at the east end, running north and south from Long-acre, along Charles-street, will be nearly an acre in extent. The basement part of the reconstructed building is divided into two portions, one portion consisting of cellarage, and the other for receiving and delivering of goods. The floor of the basement is of concrete, and has a fireproof ceiling, also in concrete. The several floors above are also of fireproof construction. The ground-floor, which is 18 ft. in height, has an arched and vaulted ceiling, resting on strong iron columns, and consisting of iron girders and concrete, constructed on Dennett's patent, the ceiling of the second floor being of similar construction, the ground and first floors being thus separated from the two upper floors by fireproof materials. The first-floor is the same height as the ground-floor below, and the second and third floors are 14 ft. high. All the several floors are supported on iron columns and girders. The ground and first and second floors will be set apart for the sale of goods in the several departments, whilst the third or top floor will be used as offices and workrooms. That part of the theatre at the east end, which consisted of the scene-dock, painting-rooms, and dressing-rooms has also been reconstructed with four floors, which will be used for the business purposes of the Association, in conjunction with the several floors already described. The west end of the building, containing the principal entrance from Long-acre, to the box circles, together with the handsome and spacious staircase and saloons, has not been structurally disturbed, and is intended to be re-decorated, whilst what were the saloons, on a level with the first and second floors, are intended to be appropriated as reading, writing, and refreshment rooms, for the accommodation of members of the association, who will be at liberty to spend their leisure there, the arrangements in this respect giving the association the character of a club. This part of the building has been entirely refaced and decorated externally.

The architects are Messrs. Drury & Lovering, and the contractors Messrs. Kirk & Randall.

Proposed Female School of Art.—We understand that Mrs. E. M. Ward proposes to supply a want which has been greatly felt in this country, in the shape of a school of art to which ladies can send their daughters to learn painting and drawing. For this purpose she has obtained the co-operation of Mr. P. H. Calderon, R.A., Mr. J. C. Hook, R.A., Mr. W. P. Frith, R.A., Mr. J. C. Horsley, R.A., Mr. J. E. Millais, R.A., and Mr. L. Alma-Tadema, R.A., who have consented to visit the school once a month, thus securing to the pupils an advantage which it would be impossible to obtain elsewhere. The instruction will include oil-painting in all its branches, water-colour painting, drawing, tile and china painting, and fan painting. Each department will be under the direct management and supervision of Mrs. Ward, assisted, when necessary, by competent instructors.

THE ARTISANS' DWELLINGS ACT AT DERBY.

ANOTHER FAILURE.

The Derby Town Council and the inhabitants of the borough generally beheld with satisfaction the passing of the Artisans' Dwellings Act in 1875, and they were not slow in deciding that when an opportune time should arrive they would put it into force in some quarter of the town. There was unanimity on the question both in the Council and among the outside public, excepting, of course, those who were the owners of buildings which were liable to come under the Act. Near the centre of the town, to the north-west of the Market-place, there exists an area which has been characterised as "unwholesome" time after time in the council-chamber. This area contains courts and alleys of a narrow, ill-ventilated character, while the houses are dilapidated and unfit for human habitation. The medical officer's reports for years past have been conclusive as to the absolute necessity for something being done to clear away the dwellings which at present exist on this area. A committee was appointed by the Town Council in 1876 to report on the best steps to be taken to effect a reform. This committee at length prepared an exhaustive report, which was laid before the Council on the 9th of November last. It recommended the entire pulling down of an area embracing 31,761 yards super. Of this, 7,576 yards were proposed to be used in the widening of old and the construction of new streets. The total cost was estimated at 86,000*l.*, 52,000*l.* of which would be realised by the re-sale of the building land, thus leaving the sum of 34,000*l.* to be paid out of the rates. The above recommendation was adopted by the Council unanimously. The matter was next brought before them on January 23, when signs of wavering were shown. Speeches were made against the project, and an amendment proposed, which was to the effect that the time had not come to put the Act into force. The amendment was, however, withdrawn, and the necessary formal representations were made to the Local Government Board. A public inquiry was held in March before Mr. Morgan, one of the Local Government inspectors. The scheme was opposed by several owners of property, some of whom urged that it was wholly unnecessary, while others contended that the Corporation were trying to take advantage of the Artisans' Dwellings Act to secure good property at the price of "unwholesome" habitations, in order that they might effect some street improvements at a little cost. As to whether or not this charge was well founded, we need not venture an opinion;—anyhow the, committee decided at the inquiry to submit to a considerable reduction of the scheme. At the meetings of the Town Council held since the inquiry, when the scheme has been introduced for its advancement, there had been sharp discussions and divisions, which had shown that the unanimity of the 9th of November has totally left the Council. On the 21st of April a meeting of the Council was held, when the decision of the Local Government Board (which was favourable to the application of the Act in the area proposed) was brought forward. The Artisans' Dwellings Committee also came forward with a proposal that the Board be asked if they would allow the corporation to divide the area into three parts, dealing with each part separately and at different periods; also that the Corporation might be allowed to possess optional power as to whether or not it should go on with the second and third portions of the scheme, after having dealt with the first. The proposition was carried by a majority of eight,—forty-four members of the Corporation voting. The Local Government Board refused to accede to this request, and at the last meeting the Council were called on to decide whether they should abandon the scheme altogether, or commit themselves to the carrying out of any portion or portions of it. In a thin Council it was decided by a majority of six to abandon it altogether. The chief argument urged against the carrying out of the scheme by its opposers was that it would tend to increase the already heavy rates of the town. Also, they point to the heavy expenditure which must soon fall on the ratepayers on their erection of a new lunatic asylum, the adoption of a thorough system of sewage, &c. But it may be said that the total cost of carrying out the original recommendation of the committee would only augment the rates by 1¼d. in the pound, and this comparatively small de-

mand would not fall on the ratepayers all at once, as the work would extend over several years. Of course, all the money which has been spent in preliminary work has been thrown away, provided the Local Government allows the Council to abandon the scheme at this stage. The Derby Town Council is noted for its vacillating proclivities, but this latest *coup* of theirs is most inexplicable. By it they aver that they made a mistake on the 9th of November; that the unwholesome area near the centre of the town is no cause of immorality, crime, and disease; that the medical officer of health's reports are fallacious; and that it is to the best interests of the town to conserve with all their accompaniments the foul courts and alleys in the vicinity of Willow-row and Walker-lane.

CARDIFF WATER SUPPLY.

THE Cardiff Corporation are promoting a Bill in this session of Parliament, called "The Cardiff Corporation Bill," for the purpose, among other things, of vesting in them the undertaking of the Cardiff Waterworks Company. The price agreed on for the works is 300,000*l*. The company obtained powers by an Act last year to construct additional works, partly pumping and partly gravitation, at an estimated cost of 135,000*l*., to meet the growing requirements of the rapidly-growing population of the town of Cardiff and the outside districts within the area of the company's supply. The Bill came before a committee of the House of Commons on the 24th and 25th ult., Sir Wilfrid Lawson, bart., chairman.

The only petition remaining against the Bill was that of the Rural Sanitary Authority of Llandaff and Whitchurch, which are not now supplied with water by the company, but are within their area of supply. The Corporation offered to construct the works necessary to supply them in the usual way, or to deliver water in bulk to them at a certain point, on liberal terms. After hearing the evidence of Mr. Alderman Jones, J.P., and Mr. John A. B. Williams, M. Inst. C.E., the engineer to the Corporation, the Chairman stated that,—

"The Committee are of opinion that the preamble of the Bill has been proved, and that they agree to clause 7; and they consider that the sum of 400*l*. a year, which is proposed to be charged to the Llandaff Sanitary Authority, is a fair and equitable amount, and they will require a clause to be framed to that effect."

The petition of the Penarth Local Board of Health, whose district is supplied by the water company, was withdrawn,—a differential rate of ten per cent. having been agreed to in favour of the ratepayers of Cardiff,—as were also the petitions of Lord Windsor and the Marquis of Bute.

NATIONAL WATER SUPPLY.

THE annual conference on national water supply, sewage, and health, was opened on Thursday, and continued yesterday (Friday), in the rooms of the Society of Arts.

Lord Alfred Churchill (chairman of the Council of the Society) occupied the chair in the absence (through illness) of the Right Hon. James Stansfeld, M.P., and in opening the proceedings, stated that in response to the offer of the Society of one gold and three silver medals for the best suggestions for dividing England and Wales into districts for the supply of pure water to the towns and villages in each district, twelve papers or essays were sent in; of these the committee appointed to adjudicate upon them (Professor Abel, Mr. John Evans, F.R.S., Captain Douglas Galton, Professor Prestwich, Professor Ramsay, and Mr. G. J. Symons, F.R.S.), selected seven as being worth printing for circulation at the Conference. The committee were of opinion that none of the essays sent in were worthy of a gold medal; but they had selected two which they thought worthy of silver medals, viz.,—1, the essay bearing the motto, "Better late than never," by Mr. Frederick Toplis; 2, that bearing the motto," "Gutta cavat lapidem, non vi, sed sæpe cadendo," by Mr. Joseph Lucas, F.G.S. The committee thought that there were many points of merit in all the seven essays they had selected for printing; but they were unanimously of opinion that the two they had selected for awards were much superior to the rest.

Mr. Toplis and Mr. Lucas having given the substance of their essays, Mr. James Birkett, Mr. Samuel B. Goslin, Mr. A. T. Atkinson, and Professor Ansted, authors of other essays sent in in response to the Society's invitation, each made a few remarks, and the discussion was continued by Mr. John Evans, F.R.S., Professor Ramsay, Mr. G. J. Symons, Mr. Henry Bright (Leamington), Captain Douglas Galton, Mr. A. H. Brown, M.P., Mr. Edwin Chadwick, C.B., Mr. C. N. Cresswell, Dr. Tripe, and Dr. Wilson.

When the Conference re-assembled after a brief interval for luncheon, Mr. Stansfeld was able to be in his place. The Conference continued sitting till past five o'clock, and the following resolution was agreed to:—

"That this Conference wishes to express its entire satisfaction at the action taken by the Prince of Wales in applying to the Government for the appointment of a Royal Commission to inquire into the subject of a national water supply; and earnestly hopes that the Government will take steps without any delay to carry into effect the resolutions of last year's Conference."

We shall publish some more extended notes of the Conference in our next.

We may add that a "national water supply" exhibition is to be opened this Saturday at the Westminster Aquarium. The exhibition will contain the following sections:—

I.—Meteorology.—Class 1. Rainfall and catchment basins, illustrated by maps, plans, tables, and models. Class 2. Instruments, rain gauges, percolation, evaporation, and river measuring apparatus, &c.

II.—Geology.—Illustrating the connexion between geological structure and available supplies of water.

III.—Collection and Storage of Water.—Plans and models of existing waterworks and waterworks in progress.

IV.—Suggested Development of Supplies.—Plans for improved supply as regards fresh sources of supply to the metropolis by embankment, &c., as regards fresh sources of supply to the metropolis, as regards groups of towns, and as regards villages and isolated towns and districts.

V.—Distribution of Water.—Class 1. Historical illustrations of old piping, taps, valves, &c. Class 2. Modern appliances for water conveyance. Class 3. Pumping, extinguishing fires, &c. Class 4. Cisterns and other household appliances.

VI.—Water Examination.—Exhibition of appliances used for chemical analysis, in microscopic examination, and in examining clearness of water.

VII.—Filtering.—Class 1. Early attempts at filtering. Class 2. Large filters for public companies. Class 3. House and domestic filters,—cistern filters, table filters.

VIII.—Hardness.—Class 1. Illustrations of the effects of hardness upon washing, cooking, and tea and coffee making. Class 2. Methods of testing hardness. Class 3. Methods for lessening hardness.

IX.—Disease.—Class 1. Maps, plans, and statistics showing the connexion between disease and bad water, polluted water, unsuitable water, and insufficient supply.

X.—Antiquarian.—Class 1. Plans and drawings illustrating early water supply of London. Class 2. Drawings, engravings, and pictures generally, illustrating buildings connected with waterworks, dolphins, fountains, &c.

XI.—Pollution.—Class 1.—Plans for preventing river pollution. Class 2. Plans for preventing well pollution. Class 3. Pollution in connexion with fisheries. Class 4. Diagrams and plans showing how pollution (often unsuspected) may occur. Class 5. Maps and plans showing the area of extensive river pollution.

XII.—Literature.

XIII.—Class 1. Appliances for cooling water in summer. Class 2. Waters artificially aërated.

AN INSURANCE QUESTION.

MARTIN *v.* COUNTY FIRE OFFICE.

THIS was an action brought to recover from the defendants the amount of two policies for the sum of 750*l*. on stock, plant, &c., in two houses in course of erection at Redesdale-street, Chelsea. The houses were nearly completed, and were insured in the Law Union Company's Office by the owner. The stock, plant, &c., were insured in the County by the builder. There had been a former policy on stock, plant, &c., which expired on March 25th. The new policy for 750*l*., by mistake of the agent of the County, was effected on the houses instead of stock, the same premium being paid, viz., 8s. per cent. After the fire the error was discovered, and on application to the County they were willing to rectify the policies, provided the Law Union would allow them to do so. The Law Union refused to recognise the error, thus the present action.

Mr. Roxburgh, Q.C., and Mr. Plunkett, appeared for plaintiffs, and Mr. Chitty, Q.C., and Mr. Burt, for defendants.

From the evidence it appeared that the plaintiffs originally effected a policy on stock, &c., in the four houses for 1,000*l*., and on February 5th effected a further policy on two of the houses for 500*l*. On March 25th, on the expiration of the 1,000*l*. policy, a fresh policy was effected for 280*l*. The old policy for 1,000*l*. being given to the office to copy from (they keeping the old policy). After the fire occurred the mistake was discovered that the last policies were on houses instead of stock, &c., but the same premium being paid, viz., 8s. per cent., policies were shown in court by the Law Union proving that it was not an extra rate of premium. The plaintiffs showed to the contrary, by placing policies before the Master of the Rolls, by which they proved that the County Fire Office had charged just double for stock to what was charged on the policy for houses, with workmen therein only. After a great deal of evidence the Master of the Rolls said there was sufficient evidence that the policies in question was a mistake on the part of the agent, and he did not think the County Fire Office should have allowed the case to come. He would adjourn the case till Thursday, in the hope that the case would be settled by the counsel.

On Thursday morning, May 1st, before the Master of the Rolls, the case again came on. Mr. Chitty, Q.C., for the defendants, stated that the Law Union withdrew from the action, and would allow the County to rectify the policies, with the consent of the Court, and would also pay the expenses of the action.

ACCOMMODATION IN THEATRES.

WITH your consent, I suggested in the pages of the *Builder* (vol. xxxv. (1877), p. 644), that as cabs and omnibuses were licensed to hold a certain number of persons, so should theatres be so licensed. It is gratifying to find that so many suggestions made public by you are one by one carried out. In the bye-laws issued by the Metropolitan Board of Works (published in your last number), the minimum space allowed to each person in any new theatre, music-hall, &c., must not be less than 1 ft. 8 in. by 1 ft. 6 in. in the gallery, and not less than 2 ft. 4 in. by 1 ft. 8 in. in the other parts. The next step should be to alter some of the present pens. The theatre in the Haymarket (upper boxes) is a disgrace to civilisation, worse than a packed slaver, for in the case of the theatre we pay with the hope of receiving a little ease and comfort. I look forward to the day when I shall hear that a rearrangement of the seats here has been insisted on.

In the dress-circle of the Lyceum, again, notwithstanding what has been said of improvements in it, there are three "places" on each side, at the extreme end of the back row, in which it is simply impossible for any man with long legs to sit; at any rate, there were such places on the opening night of the present season. I have taken good care not to make a second experiment.

To return to the aforesaid bye-laws, it is a pity that the last (17th) law (qy.) was introduced, because the whole of the preceding laws (qy.) might be entirely dispensed with, according to the personal or friendly position the applicant might be in with the Board. Y.

BLOOM ON TILES.

I HAVE had some practical experience of tile-laying, having, since March, 1846, laid some thousands with my own hands. Of course, the bed must first be levelled and floated with concrete, and Roman or Portland cement gauged half-and-half with sharp sand, taking care to wash off the surface as the work proceeds with coarse flannel drawn over the work. The efflorescence will soon show itself, and it will continue for a year or two. This must be always washed off "with plain water and elbow-grease," as my dear friend the late Herbert Minton once told me,—nothing better. It may occasionally show itself for years, especially in frosty weather. Tile floors in churches should be washed weekly if it be desired to maintain their primitive beauty. In private houses, whether glazed or plain, they should be washed daily.

As for tiles on wall surfaces, they are best set in with Keene's cement, gauged half-and-half with freestone sand. Glazed tiles rarely show any efflorescence; but as it proceeds from the cement it will find its way and appear at the joints. As for laying encaustic tiles in lime, such would be scamping the work.

H. T. E.

WASTE-WATER COCK.

SIR,—In reply to an inquiry which appeared in yours of April 19th, from "J. S. R.," I beg leave to inform you that a premium of 600 guldens has been awarded to Mr. Anton Baumgartner, engineer, Vienna, for the best cock for preventing water-waste in houses, and a premium of 300 guldens to Mr. Emil Schrabetz for the best cock for street drinking-fountains.

JOHN THOMAS GRAMLICK,
Plumber and Mainlayer to the Vienna Municipality.

YORKSHIRE FINE ART EXHIBITION.

SIR,—My attention has been called to an article in the last week's number of the *Builder* with reference to the Yorkshire Fine Art Exhibition, in which the quantity of my patent glazing (which was used for the permanent part of the building) has been omitted. The area glazed on my principle over the Lecture Hall, Picture Galleries, &c., was 14,000 superficial feet.

WM. EDGCUMBE RENDLE.

Memorial Theatre, Stratford-on-Avon. A view of the theatre in Stratford-on-Avon, inaugurated on Shakspeare's birthday lately, will be found in our volume for 1876 (xxxiv.), p. 928. According to the plan originally published, the dress circle was very badly arranged for seeing. It is to be hoped this has been amended.

BATHS AND WASH-HOUSES.

Salford.—The work of erecting new public baths in Blackfriars-street, Salford, has been commenced. The site has an area of 1,155 square yards, situate between Blackfriars-street and Ravald-street, and was purchased at a cost of 2*l.* per yard. The contract for the erection of the baths was let to Mr. J. Wilkinson, Pendleton, for 6,025*l.*, and the contract for the erection of the superintendent's house adjacent was given to Messrs. Lord & Holland, contractors. The building will be two stories in height, with gables. The material used in construction will be brick with stone and terra-cotta dressings, with blue slates and light iron girders forming the roof. The swimming-bath for men will be 87 ft. 6 in. in length and 37 ft. in breadth, the water space being 80 ft. in length by 25 ft. in breadth. There are to be twenty-six dressing-boxes on each side of the bath. The women's plunge-bath will be 38 ft. 6 in. in length and 23 ft. in breadth, and the water-space 33 ft. in length and 17 ft. in breadth, and in this department there will be twelve dressing-boxes. On the ground-floor it is also intended that there shall be twelve second-class slipper-baths for men, and on the second story there will be eight first-class slipper-baths for men, thirteen second-class slipper-baths for men, and seven first-class slipper-baths for women. The buildings will be erected from designs prepared in the Salford borough engineer's office, under the superintendence of Mr. Jacobs, and, including the price of the land, &c., the total cost is expected to be about 9,000*l.*

Nottingham.—Some short time ago the Baths and Washhouses Committee of the corporation of Nottingham resolved on increasing the bathing and swimming accommodation of the town, and it was decided to build a bath in Gedling-street sufficiently large to meet all requirements. This excellent undertaking has just been completed, and the following description will give some idea of its character:—The bath, which has been for many years an open bath, has been covered over under the direction of the committee. The new building is 120 ft. long by 60 ft. wide, and is approached by a broad flight of stone steps from the present ticket-office at the Gedling-street entrance. The bath proper is 102 ft. long by 44 ft. wide, with semicircular ends, and when filled to the proper height contains upwards of 130,000 gallons of water. A continuous supply of warm water for this bath is obtained from the condensing engine at Mr. Windley's works in Roden-street, Mr. Windley having placed this supply of water at the disposal of the corporation. The roof is in one span of 60 ft., and is carried by seven wrought-iron ribs or principals, which are semicircular in shape. The soffits of the ribs are 29 ft. above the level of the coping of the bath, and the total length of rib, including part below the floor-level, is about 95 ft. Each rib, for a height of 9 ft. above the floor-level, is of cast-iron; the remainder is of wrought-iron, with open lattice-work, the latter giving the ribs a very light appearance. The weight of each rib is about 5½ tons. The building is ventilated by means of a louvre running the whole length of the roof, and the top of this louvre, which is nearly 30 ft. wide, is entirely glazed, so that there is ample light as well as ventilation. Dressing-rooms, thirty-eight in number, and a jumping-stage have been provided for the convenience of persons using the bath, and the woodwork of which these are made, as well as the underside of the woodwork of the roof, is stained and varnished. The bath is believed to be one of the largest in the kingdom, and the cost of the work has been about 2,500*l.*

The new building and roof have been designed and constructed by Mr. M. O. Tarbotton, the engineer-in-chief to the corporation, and the work has been carried out under the immediate superintendence of Mr. A. Brown, assistant engineer. Mr. R. Middleton was the contractor for the general builder's work, and Messrs. Goddard & Massey supplied the ironwork. Mr. Carr acted as clerk of works.

The Slade Professorship at Oxford.—Mr. W. B. Richmond, son of Mr. George Richmond, R.A., has been elected to the Slade Professorship of Fine Arts in the University of Oxford, vacant by the resignation of Mr. Ruskin, who has held the appointment since its establishment in 1869.

CHURCH-BUILDING NEWS.

Preston Bagot.—The parish church of Preston Bagot was re-opened on the 25th ult., after restoration under the direction of Mr. J. A. Chatwin, of Birmingham. As the east end had to be taken down by order of the diocesan surveyor, the architect took advantage of this by extending the chancel a few yards and erecting a chancel arch, which adds greatly to the appearance of the building. The old east windows have been inserted in the new walls. In place of the red brick chamber at the west end for the bells a turret in character with the building has been erected; it is constructed of oak and covered with shingles. The old south porch was falling into decay, and has been replaced by a new open porch of English oak. The choir seats and wood pulpit have been fixed temporarily; it is hoped to have new ones in character with the building. Several of the windows of the church are filled with stained glass. The two small Norman lights in the north wall are to be filled with glass by Messrs. Hardman. The builders were Messrs. Smallwood & Co., of Wootton Wawen; the carving was executed by Mr. Roddis; and the ironwork by Mr. Wilson; Messrs. Jones & Willis made the altar-cloth and dossal and the lamps which are suspended from the roof. The heating apparatus is by Messrs. Hassall & Singleton.

Thorpebasset.—The *York Herald* says that no fewer than six churches in the Malton district are now under restoration. One of them, the interesting little Norman church of Thorpebasset, will be ready for opening in June. The piers and arches, which were blocked up in the north wall, have been opened out. A vestry has been added, separated from the north aisle and chancel by two arches, and spanned by a plain oak screen. The east and west walls retain their original character, but the higher elevation of the new roof has necessitated the reconstruction of the bell tower. The roof is now of one uniform level from east to west, and the main portion is covered with grey Westmoreland slates, the north aisle (the only one) with lead. A new porch has also been added, of open woodwork, on stone base; and this will prove a much-needed protection to the fine old Norman doorway, which has survived so many restorations. All the windows in the north and south walls are new, replacing what were really "cottage" windows. In pulling down the north wall the workmen found, in two portions, a sarcophagus, with decorated front. The architects are Messrs. Paley & Austin, of Lancaster, and the contractor is Mr. Brown, of York.

Gloucester.—It is proposed to enlarge and improve St. James's Church. The church, which was erected about forty years ago, is a large parallelogram, 79 ft. by 38 ft., is placed on the ground north and south instead of east and west, and has no defined chancel. There is at present accommodation for about 640 worshippers, and it is proposed to increase this to 900 by adding an aisle on the east side, 71 ft. in length and 12 ft. wide, and extending the building towards the south, so as to provide a proper chancel, with aisles in which the organ and choir can be placed, to reseat the whole church, and to carry out various minor alterations. Messrs. F. S. Waller & Son are the architects.

Hockerill, Herts.—The parish church of All Saints, Hockerill, was reopened by the Bishop of Rochester on the 30th ult., after considerable enlargement and alteration. This church, built in 1851, was found insufficient to meet the growing requirements of the parish and the students from the Diocesan Training College near. The additions, from designs by Mr. Clarke, have been an extension to the length of nave, new north aisle; extension of south aisle, by adding baptistery; new clergy and choir vestries, and an extensive organ-chamber, with arcaded frontage to chancel. The chancel has been rebuilt and extended, the arch and gable over being taken down and rebuilt to obtain extra height and width. The small south porch has been removed, and a porch erected in a new position. The columns of chancel arch and east window are of Devonshire marble; the sedilia, credence, and piscina are of Ancaster stone; and the floors are laid with Godwin's tiles, specially modelled from old examples. The stained-glass windows are by Mr. W. G. Taylor; the heating-apparatus is by Messrs. Price & Co.; and the gas-fittings by Mr. Shrivell. The cost of the works has been about 9,000*l.* The columns of arcade and all external dressings are of Ancaster stone; the internal dressings are in Bath stone; and the external walls are faced with Kentish rag-stone, worked on the site in random coursed work. The contractor for the whole of the work was Mr. Thomas Gregory, of Clapham Junction. Mr. J. White acted as clerk of works, the builder's foreman being Mr. J. W. Crook.

VARIORUM.

We have mentioned before now the little "Health Primers," edited by several well-known men, and published by Messrs. Hardwicke & Bogue, of Piccadilly. Several additions have since been made to the list, notably "Baths and Bathing" and "Personal Appearances in Health and Disease." These may be usefully read.——"The Secret of a Clear Head," by one of the editors of the last-named series, Dr. J. Mortimer Granville (Hardwicke & Bogue), contains much sound and sensible teaching. We fully agree with him when he says,—"The head may be cultured at the cost of the heart; but it is the latter we need most earnestly to purify and elevate."——A good and well-known novel for *sixpence!* If any doubt it, go to F. Warne & Co., of Bedford-street. "Notable Novels" is the title of the series, and we have now before us "Mr. Midshipman Easy," by Marryat; "Attila," by G. P. R. James; and "Rory O'More," by Samuel Lover, as evidences of the fact.——The current *Quarterly* includes two articles which which will be found specially interesting by our readers, namely, "Michel-angelo and his Age," and a review of "Brugsch's History of Egypt." This was the work which produced our article, "Architects in Ancient Egypt" (p. 415, *ante*). An English version of Brugsch has been recently published.*——From *Great Industries of Great Britain* we take a paragraph as to the Potter's Oven:—"We hear a great deal of the potter's oven; but to the uninitiated it certainly gives no complete conception of the cavernous structure, in which, night after night, tens of thousands of articles in soft clay are being burned into hard, brittle, resonant, opaque, or semi-transparent articles of pottery. Viewed from the outside, the oven looks like a huge tun-dish, imitated in brick. Inside, when the grey light from the opening high above falls in dull rays, it appears like a massive domed cylinder of brickwork. Running round it is a kind of conical casing, also built of brick, which has the effect of protecting the kiln from the changes of temperature. The kiln itself, at the opening above, merely joins this outer casing. Of late years many improvements have been made in the construction of these kilns; and by an arrangement of flues, to a great extent, if not entirely, they consume their own smoke. There are also means for regulating the draughts. The oven, it should be added, is strongly bound with iron bands, and the bricks are of the very best fire-proof quality. The task of filling this little cavern, called in modesty an oven, is no light one. It is a work which engages the labour of strong and sturdy men all through the day. The kiln, it must be borne in mind, runs to a great height, and the 'seggars' are packed to the top. They are piled in rows one above another, the flat bottom of one 'seggar' forming a cover to the open mouth of the 'seggar' immediately beneath it. The surfaces of the 'seggars' are separated by a ring of soft clay, which acts as a tight-fitting joint. The oven is full when it contains from 700 to 800 'seggars,' and this quantity would contain about 30,000 pieces. There are, however, some colossal kilns which will receive as many as 2,000 'seggars.' The 'seggars' having been properly arranged and steadied, the door of the kiln is bricked up, and, generally in the evening, the fires are lighted. These fires run underneath the kiln, and in some large ovens there are as many as ten, and never less than eight. The consumption of coal is necessarily enormous, as much as 10 or 12 tons being burned at one firing. After the firing has lasted about forty-eight hours,—which is the average for the 'biscuit' fire,—the oven is allowed gradually to cool; and it is afterwards 'drawn.'"——We reprint from the *Magazine of Art* the following as to ancient sculpture in gold and ivory:—"Of all the sculpture of the Greek artists of antiquity none was more remarkable than the chryselephantine statues. The Greek words *chrusos* (gold) and *elephantinos* (of ivory) indi-

* A History of Egypt under Pharaoh, derived entirely from the Monuments. By Henry Brugsch Bey. London Murray. 1879.

cate the costly material of which such sculpture was made. We have not so much as a fragment of any of these statues remaining, nor have we more than scanty notices of how they were put together, and what they were like. But they were the most renowned, the oftenest seen, and the most carefully tended, among thousands of objects of public and religious veneration. The materials are so precious that we should naturally expect to hear of such statues having been on a small scale. Ivory might have been obtainable from mammoth-tusks by the Greeks, and a good deal larger than those of the elephant in the Middle Ages and modern times. Such tusks were, perhaps, to be dug up in various parts of Europe, as they are still found in Russia; but still any objects sculptured in ivory we should conclude must have been of small dimensions. This, however, was not the case. Gold, again, could not have been very abundant in Greece; nothing like what it became in imperial Rome and in Constantinople. But these famous statues were the largest known (out of Egypt). The general tendency of modern theories leads to the conclusion that though the materials of which sculptors make use should be of fine grain and pure whiteness, such as Pentelic or Parian marble, yet that little reliance is to be placed on the splendour of mere material, and that the mind should be directed rather to the deep and imaginative beauty which the artist has embodied in his sculpture. Statues of gold and ivory are to some extent in contradiction to such teaching, true as it is when broadly stated. Some great authorities of our day have gone so far as to think but little of the reputed beauty of these pieces of sculpture. Except for the preciousness and splendour of the materials, these authorities do not consider that they were by any means the masterpieces of Phidias and the other sculptors by whom they were executed. The marbles that have survived to our days, such as those of the Parthenon, have lost any colouring material that may once have graced them, and their beauty is such, and so perfect, that we find it difficult to imagine it as greater by any addition of colour. It remains nevertheless, true that the greatest sculptors made gold and ivory statues as their masterpieces; expended all their art upon them; and these productions were accepted during many centuries by the most critical of nations, not only as the most precious, but also as the most beautiful examples of sculpture in the world."

Miscellanea.

Mr. James Forsyth, Sculptor.—We have pleasure in recording the formal opening of Mr. Forsyth's new premises, which took place on the 1st instant. They are situated in the Finchley-road, Hampstead, immediately adjoining the Finchley-road Station of the London and North-Western Railway, and appear in every way fitted for the execution and display, on a large scale, of his art works. We have had many opportunities of referring to and, on several occasions, of illustrating in this journal Mr. Forsyth's works, which are generally above the average of their kind. He is to be congratulated on his enterprise, in having secured such a good position, and on the erection of such large and convenient premises. They consist of a dwelling-house of four floors, flanked by a gallery 43 ft. long. This gallery conducts to the operative parts of the premises, through a modelling-room, 27 ft. high. to the shops for carvers, masons, pointers, and joiners, with a yard in the centre spanned by a travelling-crane equal to 20 tons. Mr. W. Smith, of John-street, Adetphi, was the architect, and Messrs. Patman & Fotheringham were the builders.

Truro Cathedral.—A meeting of the general committee of the Truro Cathedral Fund has been held to inspect the plans of Mr. J. L. Pearson for the proposed cathedral. The style is that of the early part of the thirteenth century, and there are to be a central and two western towers. The length from east to west is about 300 ft. For the choir 115 ft. is allowed, and for the nave 165 ft. Mr. Pearson estimated the cost at 95,000*l.*, which, with 10,000*l.* required for purchase of land, &c., gives a total to be raised of 105,000*l.* The plans, which were in an unfinished state, owing to the illness of Mr. Pearson, were referred to the executive committee to examine and report upon to the general committee.

St. Bartholomew's Hospital.—A handsome addition to Bartholomew's Hospital is in course of construction, and is finished externally. It consists of a library, practical class-room, museum, lift-rooms, and offices. The frontage to Giltspur-street displays a fine Classic elevation, designed and executed in the best style of that school of architecture. The base is composed of Dalbeattie granite, and is 7 ft. 6 in. in height. The upper portions consist of Portland stone, with intermediate Aberdeen polished granite panels sunk and moulded. There is a chaste cornice and balustrade, under the former being the inscription "Schola Medicinæ Sancti Bartholomei, A.D. MDCCCLXXVIII. The principal room in the interior is the Turnerian museum, 26 ft. 6 in. by 96 ft. 6 in. The height is 26 ft. from the floor to plate of roof, and 15 ft. from the plate of the roof to the ceiling. The lighting is effected by a skylight and lantern-light. There are two galleries, which will be fitted up in the style of those in the Royal College of Surgeons, Lincoln's-Inn-fields. The practical class-room and library are of about nearly equal dimensions with the museum. The library, situated on the ground floor, will have one gallery. The staircase to the offices is of Dalbeattie granite, and the same material has been used for the entrance steps to the porch. The grand staircase, as well as all the internal stairs, are composed of choice Craigleith stone. The floor of the museum consists of wainscot parquetry in narrow widths, diagonally laid with pitch-pine borders. The material used in the construction of the offices and lift-rooms is white glazed brick facings, supplied by the Farnley Iron Company, near Leeds. The building has an iron span roof by Messrs. Moreland & Son, who also furnish the girders, which are of unusual strength. The greatest care has been taken to make the building thoroughly fire-proof, and the whole of the works are being carried out by the contractor in the most efficient and substantial manner. The heating will be by hot water, for which the apparatus has been supplied by Messrs. Herring of Chertsey. The architect is Mr. Edward l'Anson, Laurence Pountney-hill; the contractor, Mr. Deputy Brass, Old-street; the clerk of works, Mr. G. Streeter; and the builders' foreman, Mr. A. J. Pearce.—*City Press.*

London Temperance Hospital.—The memorial stone of a hospital in which patients are to be treated without the use of alcohol has been laid by Sir Wilfrid Lawson, M.P. The site chosen for the new hospital is a plot of ground about 100 ft. by 160 ft. in area, adjoining St. James's chapel, on the eastern side of Hampstead-road. From October, 1873, when the Temperance Hospital was opened in Gower-street, to April, 1879, the number of indoor patients had been 725, and of these only 34 had died. The number of outdoor patients had been 6,655, making a total of 7,380 patients who had been under treatment in the institution. It was hoped that the builders would be able to complete their work in the autumn, and that the hospital might be furnished and ready for patients before the close of the year. About 1,000*l.* were laid upon the memorial stone as contributions to the cost of building the portion now commenced, leaving about 2,000*l.* still to collected to make up the sum of 11,500*l.* required for the present contract. The architect is Mr. F. R. Barker, of Manchester.

Fire Prevention.—The destruction by fire of the Shakspeare Library, at Birmingham, has, not unnaturally, attracted attention to the necessity of providing additional and adequate appliances for the protection of historic buildings of educational or other interest. At Oxford, it has been resolved to equip the city brigade with a powerful steam fire-engine; and with a view to making the most satisfactory selection, the authorities, with whom the matter rested, personally visited or made inquiries of the principal brigades throughout the kingdom, the result being that the order was placed with Messrs. Merryweather & Sons, who obtained two gold medals at the Paris Exhibition.

Tell's Chapel.—We learn from the *Urner Zeitung* that the taking down of the Tellscapelle on the Vierwaldstädter See is proceeding, after the frescoes which it contained had been successfully removed. They are to be placed again in the new chapel, the erection of which will be commenced immediately. The bell of the old chapel bore the date 1590, the oath taken on the Rütli by the founders of the Republic being also engraved on it.

Liverpool Engineering Society.—At the seventy-eighth meeting, on Wednesday, the 7th inst., the president, Mr. Morgan E. Yeatman, in the chair, a paper was read by the secretary, Mr. J. Birch, on "Some recent Developments of the Manufacture of Mild Steel and its Applications." The writer, after giving a short account of the newly-invented process of Messrs. Bolckow, Vaughan, & Co. for making Bessemer steel from phosphoric Cleveland ores, which, if ultimately successful, as expected, promises to largely, if not entirely, supplant the manufacture of iron, proceeded to point out with what rapidity the use of steel had advanced. Twenty years ago it was scarcely in use for general purposes, and now the large demand for it was causing an amount of attention by the first metallurgists of the day, that would of itself be likely to lead to existing obstacles being removed, and the great objections on the score of un-reliability, the difficulty of welding, and liability of corrosion, no longer stand in the way, many of these being now in course of removal, and their importance being exaggerated by the employment of steel without sufficient care, or by persons prejudiced against the material from previous experience, at a time when the manufacture was not as well understood as now, the success of the open-hearth system having led to far greater care in the Bessemer process.

Antiquarian Discoveries in Gloucestershire.—The interesting church of Iron Acton, in this county, is now in course of restoration, and the laying open of the original pavement, long covered up, has (according to the *Gloucestershire Chronicle*) led to several discoveries. Hidden under a Jacobean tomb, probably of about 1600, was found a slab covering the grave of a priest. A small brass, which doubtless bore the name of the deceased, has disappeared, but there are still a beautifully foliated cross, in fine condition, and representations of a missal and chalice. Another slab is still more interesting. As it appeared until recently, it seemed an ordinary tombstone, in memory of the mother-in-law of a rector, who died early in the last century. But upon the workmen turning it over it proved to have a much earlier date, a finely-cut Latin inscription denoting that it had covered the grave of Florence, wife of Edward Poyntz, lord of the manor, who died in 159-. A peculiarity of the inscription is that after giving the date of death in the month of March, it adds,—"juxta computationem Anglicani." Another slab discovered,—to the memory of Hugh Poyntz, who died in 1604,—also bears the words "juxta comp,"—the rest of the letters being obliterated. There seems no way of accounting for these words except by supposing that the Poyntz family, being Roman Catholics, rendered this inferential obedience to the head of their Church, the correction of the calendar, known as the New Style, having been made by Pope Gregory XIII. in 1582. An effigy, in armour, in very good condition, thanks to innumerable coats of whitewash, exists in the church, and is supposed by some to be that of Sir Nicholas. A female effigy of about the same date also survives the iconoclasm of centuries. There are also slabs of Sir Robert Poyntz and his two wives. He was the builder of the singularly-beautiful churchyard cross, one of the finest in the West of England.

West Derby, Liverpool.—The surveyor to the West Derby Board, Mr. E. H. Allies, has lately made his annual report, from whith it appears that the total length of roads in the district is sixty-three miles. The number of houses for which plans have been submitted and approved during the year, is 427. New streets twenty. The population of the district is 32,263; the number of assessments, 6,799; and the rateable value, 174,514*l.* The health of the district has been very good compared to the borough of Liverpool, the death rate being 17·63 per 1,000. The sewage farm of 207 acres has prospered, and shows a profit on working during the year of 632*l.* 16s. 3d.

"Mowlem & Co."—The testimonial portrait of Mr. Sheriff Burt, intended for presentation to Mrs. Burt by more than 1,000 workmen in the employ of Messrs. Mowlem & Co., in which the sheriff is senior partner, is No. 346 in the Royal Academy Exhibition. It is the work of Mr. J. Edgar Williams.

Surveyorships.—At the last meeting of the Toxteth Park Local Board, Liverpool, Mr. J. A. Hall, jun., was appointed assistant-surveyor to the Board.

Manchester.—On the 30th ult. the memorial-stone of the new board school which is in course of erection in South Hall-street, Strangeways, was laid by Mr. Joseph Phythian. The building, with which considerable progress has been made, is situate at the junction of South Hall-street and Lord-street, Cheetham. The site has an area of 3,960 square yards, having frontages to three streets, that to Lord-street measuring 76 yds. 6 in., that to South Hall-street 78 yds. 29 in., and that to Clarence-street 38 yds. 28 in. The building is of Gothic character, the principal façade fronting Lord-street, and measuring in length 66 yds., having a central feature and end projecting wings. In the South Hall-street front is the tower, measuring, from the ground-line to the eaves, 48 ft., with a quick-pitched hipped roof, terminating with wrought-iron cresting and finials, the total height from the ground being 70 ft. The walls externally are faced with picked common bricks of a light tint, and finished with a strong slate joint, the arches and moulded corbelling to eaves and projecting windows being in stock bricks. The windows generally are finished with stone jambs, mullions, and transoms, those in the main gables having in addition geometric traceried heads. The ground-floor is arranged for infants and juniors. The upper part is devoted to the boys and girls, each department having its own entrance, with convenient well-lighted staircases, and comprising schoolroom, 56 ft. by 32 ft., and 18 ft. average height, and three classrooms, two of which are 19 ft. 6 in. by 17 ft., and one 17 ft. by 15 ft. 6 in., all with a mean height of 16 ft. The warming arrangements will be carried out by Messrs. William Wilson & Sons, of Manchester, and will be by means of open fireplaces and ventilating grates. A large kitchen, with coal and fuel stores, is provided in the basement. There are three large playgrounds. The schools are designed to accommodate 1,038 children, viz., 300 infants, 209 juniors, 264 boys, and 265 girls. The floor space allotted to each child is 10 square feet, and the cubic air space 165 feet. The contract for the erection of the building, including the boundary-walling and playgrounds, but exclusive of the foundations, furniture, and fittings, is 7,760*l*. The works are being carried out by Mr. William Southern, contractor, Salford, from the designs and under the supervision of the architects, Messrs. Royle & Bennett, Manchester.

Noteworthy Houses in London.—We are glad that the Court of Common Council has resolved to take into consideration the proposal submitted by the Society of Arts to erect memorial tablets on noteworthy houses within the City bounds. It is desirable that the present and succeeding generations should be reminded in this way of the men whose works have helped to make England great in the world of art, literature, and science. Nor should they be allowed to lose sight of the ancient landmarks of the City. Temple Bar has almost entirely disappeared, yet no definite plan has, we believe, been decided on,—though doubtless it will be,—for enabling those who may come after us to identify the historic spot on which it has stood for centuries. What, too, of the sites of the other City gates? What visible record is there of the sites of Aldersgate, of Ludgate, and of other important structures, the memory of which is chiefly kept alive by the designation of the thoroughfares in the neighbourhood of which they formerly stood? The cost of putting up some permanent memorial of these structures and of public buildings whose names have been associated with the City's greatness would not be serious, and no one would begrudge it. What is there to point out the precise locality of the house in which Milton lived, in the neighbourhood of Aldersgate-street; or of the place where Defoe was born, in Fore-street; or of the theatre at Blackfriars, where many of Shakspeare's immortal plays were performed?—*City Press.*

Titian.—A picture of "Danae," ascribed to Titian, is now on exhibition at the Cercle Artistique in the Rue Vivienne, Paris. Danae is represented reclining in a voluptuous pose on a couch; beyond the drapery, at the back, is seen a red landscape with the shades of night fast falling. The descent of Jupiter is depicted by the proverbial shower of gold. The same subject and the same model have been several times painted by the great Venetian master; the present example, to the discovery of which a curious history is attached, is remarkable for the gracefulness with which the subject is treated, and the exquisite beauty of the figure.

The Legend of Cologne Cathedral.—A correspondent of the Buffalo *Courier* relates the legend of Cologne Cathedral in a form slightly different from the one that it usually wears. He says:—"As the story goes, the inventor was walking one day by the Rhine, trying to think out some design which should be sufficiently grand, and sketching his thoughts in the soft sand at his feet. At last he was satisfied, and said, 'It shall be like that.' 'Oh, I will show you a much better plan,' said a voice behind him, and on turning he saw the figure which has become familiar to the readers of 'Faust,' and to the users of profane language. With his cloven hoof this newly-found friend drew the outlines on the beach with startling rapidity and skill. But he had met his match in this plain German workman. He was made to explain minutely every detail, for the trembling architect knew that probably his own soul would be the price of this knowledge. Then he said to Mephistopheles, as he suddenly thought of a way out of the difficulty, 'Your plan is not quite satisfactory; I will not take it.' The soft voice of his hoof-footed visitor became a rough roar. He saw that he had been outwitted. 'You may build your cathedral according to this plan,' he shrieked, 'but you will never finish it!' This was seven hundred years ago. The Satanic threat was not in vain. Though multitudes of men have worked upon it for hundreds of years, the cathedral has never been finished. Now, as if in despair, the authorities have apparently turned once more to the outwitted but revengeful author of the design. The tickets of a gigantic gambling scheme, called the 'Cologne Cathedral Lottery,' are sold in every town of the empire, and the profits form a church-building fund. If the famous black gentleman is ever influenced by flattery, and by humble appeals for his assistance, we may soon expect that the curse will be removed and the great cathedral completed."

Surcharging the Metropolitan Board of Works.—At the annual audit of accounts of the Metropolitan Board of Works for the past year, Mr. W. Tucker, the auditor appointed by the Lords Commissioners of her Majesty's Treasury, upon reading an item of over 16,000*l*., charged in the accounts as expenses incurred in the promotion of the Bills introduced into Parliament by the Board last Session for the better supply of water to the metropolis, announced that he had received several notices of objection to the payments of such accounts, and that he had been called upon to surcharge the Board for such expenditure. The auditor ruled that he could pay no attention to these combined oppositionists, but the objectors must appear before him as individual ratepayers and state their objections. Upon this one or two of the strong opponents in the Board, backed by several ratepayers, were heard upon their objections, which were combated by prominent members of the Board. The auditor contended that what the Board ought to have done was to have procured the resolution of Parliament, which would have cost nothing. He held the expenditure to be illegal, and surcharged the Board the 16,000*l*. It is understood there is no appeal against this decision.

The Drainage of Brecon.—A meeting of the Town Council was held on the 9th inst., for the purpose of completing the following agreements and contract in reference to the sewage works, by affixing the corporate seal thereto, viz.,—Agreement with Messrs. Gotto & Beesley, as consulting engineers; agreement with Mr. Rhys Davies, as resident engineer; agreement with Mr. Charles Harvey, as clerk of the works; and contract with Mr. John Mackay for execution of sewage works.

Value of London Property.—Property of the late Mr. Edmund Rushworth, of Savile-row, sold at the Mart by Messrs. Chinnock & Galsworthy, met with remarkable competition. It consisted of houses and shops in various streets in Soho, Regent-street, and Paddington, realising 29,340*l*., being, we are informed, 20 to 30 per cent. higher than the price the property was purchased at a few years since, although the leases of some of the houses have become considerably shortened.

The National Penny Bank, Limited.—The ceremony of laying the foundation stone of the Clerkenwell Branch, Clerkenwell-road (at the corner of St. John's-square), will take place on Wednesday, the 21st May, at four o'clock p.m.

A Romano-British Tomb.—A discovery has been made on the estate of Mr. George Palmer, M.P., at Eling, near Newbury. During the course of excavating for field drainage, the workmen struck upon an arched vault or grave, which has been pronounced by Mr. W. Money, F.S.A., of Newbury, to be a Romano-British sepulchral chamber. The tomb lies north-east and south-west, and gives an inside measurement of 8 ft. in length by 2 ft. in breadth, the height of the roof from the floor to the ridge being about 4 ft. The walls, which are built of rough flint with bonding courses of brick, are 2 ft. high, and as perfect as when they were first raised. From the walls spring an arched, peaked roof or cover, formed of the well-known flanged Roman roof tiles overlapping each other, and set in mortar. Within this the interment took place.

A Sensible Workman.—Not long since, the remark was made in the presence of a New York plumber, that one of his neighbours had refused to subscribe to the *American Plumber*, because he knew all he cared to learn about plumbing. With an indescribable expression of disgust, the other observed, "That man is evidently a d—— fool! I've been working all my life, and when I can't learn anything more I want to die." Michelangelo said the same thing in other words.

Price of Land in Paris.—Eight lots of ground in the Rue des Pyramides, near the church of St. Roch, were sold recently. The City demanded 1,309,650 francs; they fetched 2,396,500 francs, or nearly double. This represents an average price per mètre of 1,330 francs, or about 54*l*. sterling the yard.

The Marble Doorway from one of the old palaces of Genoa, which has lately been acquired by the South Kensington Museum, at a cost of 750*l*., has now been set up in one of the arcades of the North Court, where it is seen to advantage. It is the work of L. da Romenio da Campione, and the date is given as A.D. 1519.

TENDERS

For building stable, Commercial-road, E., for Mr. Smith. Mr C. A. Legg, architect:—

Parrish (accepted)	£168 0 0

For the erection of Wesleyan chapel, Rotherfield. Mr. S. W. Haughton, architect:—

By local arrangement, £60	0 0

For erection of two houses, part of proposed terrace, at Hanwell, for Mr. F. Whiting. Mr. J. Norris, architect:—

Hoare (accepted)	£1,340 0 0

For proposed new warehouse at Bankside, S.E., for Mr. Moss Isaacs. Mr. Charles Sewell, architect:—

Stevenson	£4,618 0 0
Martin, Wills, & Co.	4,479 0 0
Jones & Co.	4,363 0 0
Niblett	4,349 0 0
Dickenson	4,339 0 0
J. Smith	4,294 0 0
Wise	4,285 0 0
S. & G. L. Mann	4,197 0 0
Prout	4,100 0 0
Laing & Son	4,091 0 0
Castle	3,923 0 0
W. & F. Croaker	3,787 0 0
H. R. Wagner	3,610 0 0
Sheffield & Prebble	3,473 0 0
Scott	3,446 0 0
Stone	3,260 16 0

For picture-gallery, library, and sundry alterations, at Downside House, Leatherhead, for Mr. W. Lee. Messrs. Edward Salomons and E. Selden Wornum, architects. Quantities by Mr. W. G. E. Bagg:—

Dove Brothers	£5,560 0 0
Holland & Hannen	5,475 0 0
Nightingale	5,283 0 0
Kinninmont & Son	5,160 0 0
Shaw	4,968 0 0

For rebuilding Scottish Hospital, Crane-court, Fleet-street. Professor Donaldson, architect. Quantities by Messrs. George Lansdown & Harriss:—

Thorn	£6,890 0 0
Aldin & Sons	6,633 0 0
Lawrence & Son	6,612 0 0
Brown & Robinson	6,451 0 0
Patman & Fotheringham	6,355 0 0
Langmead & Way	6,350 0 0
Bury & Co.	6,150 0 0
Kirk & Randall	6,140 0 0
Hobson (accepted)	5,778 0 0

For rebuilding the Mansion House Tavern, in Evelyn-street, Deptford (exclusive of bar fittings), a shop adjoining, and four cottages in the rear, for Mr. W. H. Chapman. Mr. Albert Vigars, architect:—

Grimwood & Sons	£5,430 0 0
Heath	4,650 0 0
Beale	4,595 0 0
Kirk	4,562 0 0
Macey	4,391 0 0

For a pair of semi-detached villas, in Waterloo-road, Shepton Mallet, Somerset, for Mr. F. Gare. Messrs. Budd & Spire, architects:—

F. W. Pullen (accepted) £1,366 0 0

For shop and dwelling-house, in High-street, Shepton Mallet, for Mr. Thomas Parker. Messrs. Budd & Spire, architects:—

J. & S. Emery (accepted)..... £1,450 0 0

For a pair of semi-detached residences, at West Shepton, for Mr. C. J. Brown. Messrs. Budd & Spire, architects:—

J. H. Pullen (accepted) £510 0 0

For shop and premises, at Oakhill, Shepton, for Mr. C. M. Jones. Messrs. Budd & Spire, architects:—

J. & S. Emery (accepted)..... £674 0 0

For villa residences, Arlington-road, Surbiton, for Mr. A Hitchcock. Mr. Samuel Mather, architect. Quantities by Mr. Alfred Boxall:—

Mudie	£3,700 0 0
Wells	3,450 0 0
Hickinbottom	3,446 0 0
Hurst	3,393 0 0
Jarvis	3,135 0 0
Adkins	2,985 0 0

For alterations and additions to premises, Duke-street, and King's-road, Reading, for Messrs. Holmes. Messrs. Brown & Albury, architects:—

Sheppard	£1,949 0 0
Higgs	1,943 0 0
Pottley	1,930 0 0
Searle	1,900 0 0
Simonds	1,897 0 0

Work divided between Searle and Simonds.

For alterations at the "Yorkshire Grey," No. 17, London-street, Fitzroy-square, for Mr. Thomas Sturdy. Mr. James Robert Furniss, architect:—

Wimple	£342 0 0
Edgley	330 0 0
Adams	326 0 0
Sprake & Foreman	277 0 0
Steed Brothers	275 0 0
White	273 0 0
Grimwood & Sons	249 0 0

For the erection of purifying-house for the Tottenham and Edmonton Gas Light and Coke Company. Mr. W. H. H. Broadberry, engineer:—

Contract No. 1.

Clemence (accepted).

For first section of works for restoration of Shern Hall, Walthamstow. Mr. Sextus Dyball, architect. Quantities by Mr. W. E. Stoner:—

Ashby Brothers (accepted) £3,152 0 0

For new building, Benjamin-street, Cow-cross, for Messrs. Crow & Sons. Mr. Edmund Woodthorpe, architect. Quantities by Messrs. Franklin & Andrews:—

		Deduct if zinc instead of lead.
Elsdon	£3,125	£95
Ashby & Horner	2,472	120
Browne & Robinson	2,434	125
Ashby Brothers	2,420	110
Conder	2,385	158
Langmead & Way	2,342	120
Brass	2,308	120
Jarratt	2,244	75

For new roads and drains on the Eversfield Estate, St. Leonard's-on-Sea. Messrs. Fowler & Hill, architects:—

Gasson	£806 0 0
King	775 0 0
Cruttenden	723 0 0

For two houses, Sale, Manchester. Mr. G. H. Courtis, architect:—

Wilson, Stott, &c.	£2,519 0 0
Winstanley	2,484 0 0
Holt	2,435 0 0
Stone	2,420 0 0
Harrower	2,400 0 0
Hibbert	2,330 0 0
Williams	2,240 0 0
Elms & Evans	2,222 0 0
Johnson	2,200 0 0
Thompson	2,136 0 0
Macfarlane	2,098 0 0

For rebuilding public-house and twelve houses, Paradise-street, Rotherhithe, for Mr. W. Whale. Messrs. Snooke & Stock, architects. Quantities by Messrs. Linsdeel & Giffard:—

Joselyn	£9,880 0 0
Browne & Robinson	8,250 0 0
Rider & Son	7,998 0 0
Holland & Hannen	7,987 0 0
McLachlan & Sons	7,980 0 0
Greenwood	7,800 0 0
Wells	7,777 0 0
Bangs & Co.	7,630 0 0
Manley	7,565 0 0

For carrying out the system of sewerage about to be applied to Royston:—

Harris	£2,925 0 0!
Varty & Honour	2,648 0 0
Stapleton	2,470 0 0
Worboys	2,182 0 0
Hunt	2,169 0 0
Dover Brothers	2,119 0 0
Cowdery & Co.	2,050 11 0
Potter	1,995 0 0
Stiff	1,987 0 0
Needham	1,975 0 0
Williams	1,869 0 0
Dixon	1,799 0 0
Strachan & Co.	1,750 0 0
Rowland Brothers	1,700 0 0
Coker	1,680 0 0
Pattinson	1,548 0 0
Redhouse	1,485 10 0!

For a new jetty in the River Usk, to discharge ballast from vessels (exclusive of crane), for the Newport Harbour Commissioners. Mr. E. A. Lansdowne, architect:—

Marrows	£1,005 0 0
Firbank (accepted)	870 0 0
Thomas & Son	850 0 0

For the erection of conventual building, with chapel, in the Lillie-road, West Brompton. Messrs. Goldie & Child, architects. Quantities by Mr. James Schofield:—

Braid & Co.	£12,450 0 0
Nash	12,000 0 0
Shaw	11,915 0 0
Higgs & Hill	11,794 0 0
Rider & Son	11,772 0 0
Perry & Co.	11,624 0 0
Longmire & Burge	11,580 0 0
Roberts, Brothers	11,439 0 0
Nightingale	11,383 0 0
Macey & Sons	11,370 0 0
Conder	11,236 0 0
Lucas & Son (accepted)	10,770 0 0

For alteration to Yarra House, Cleethorpes, Great Grimsby, for Mr. Joseph Chapman. Mr. J. Henry Maughan, architect:—

Emerson	£886 12 0
Doughty	670 0 0
Wilkinson	523 0 0
Sowden	499 0 0
Glew	482 10 3
Fletcher	453 0 0
Mashford	434 0 0
Nightingale & Danby	427 14 0

For the erection of a pair of villa residences, Grove Park, Chiswick, for Mr. Thomas Waterhouse. Mr. William George Tutt, architect. Quantities supplied:—

Hobern	£2,345 0 0
Jones & Co.	2,250 0 0
Simmonds	2,100 0 0
Niblett	2,080 0 0
Dorey	2,070 0 0
Wagner	2,050 0 0
Went & Perkins	2,048 0 0
Raymes	1,980 0 0
Beale	1,836 0 0

For building thirty cottages on Hounslow-heath, for Mr. P. Mecklenberg:—

Hiscock	£4,000 0 0!
Martin & Wells	3,769 0 0
Gamage	3,600 0 0
Dannells	2,910 0 0
Leonard	2,750 0 0!

For building five cottages at Hounslow, for Messrs. G. & W. Hayes:—

Gamage (accepted).

For three pairs of cottages, for Mr. S. Day, Leatherhead. Mr. R. W. Moore, architect:—

Brown	£1,445 0 0
Batchelor	1,059 0 0
Walker	984 0 0

For alteration at Railway Hotel, Silvertown, for Mr. W. Ouston. Mr. J. T. Newman, architect:—

Hoskings, Brothers	£457 0 0
Reed	439 0 0
North, Brothers	429 0 0

123, *New Bond-street*.—Messrs. David G. Laing & Son write to say that the amount of their tender was 5,047*l.*, and not 6,047*l.* as printed on p. 523.

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B. M. W.—D. W.—E. A. L.—J. K.—W. E. R.—T. H.—A. K.—W. H.—T. G.—F. W.—C. B.—J. D.—J. C. B.—F. F. (we cannot comply).—Surveyor (next week).—W. G. S.—H. S.—F. K.—C.—D. W.—India.—S. D.—G. A. W.—J. A. H.—L. & H.—B. & S.—H. & R. (next week).

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